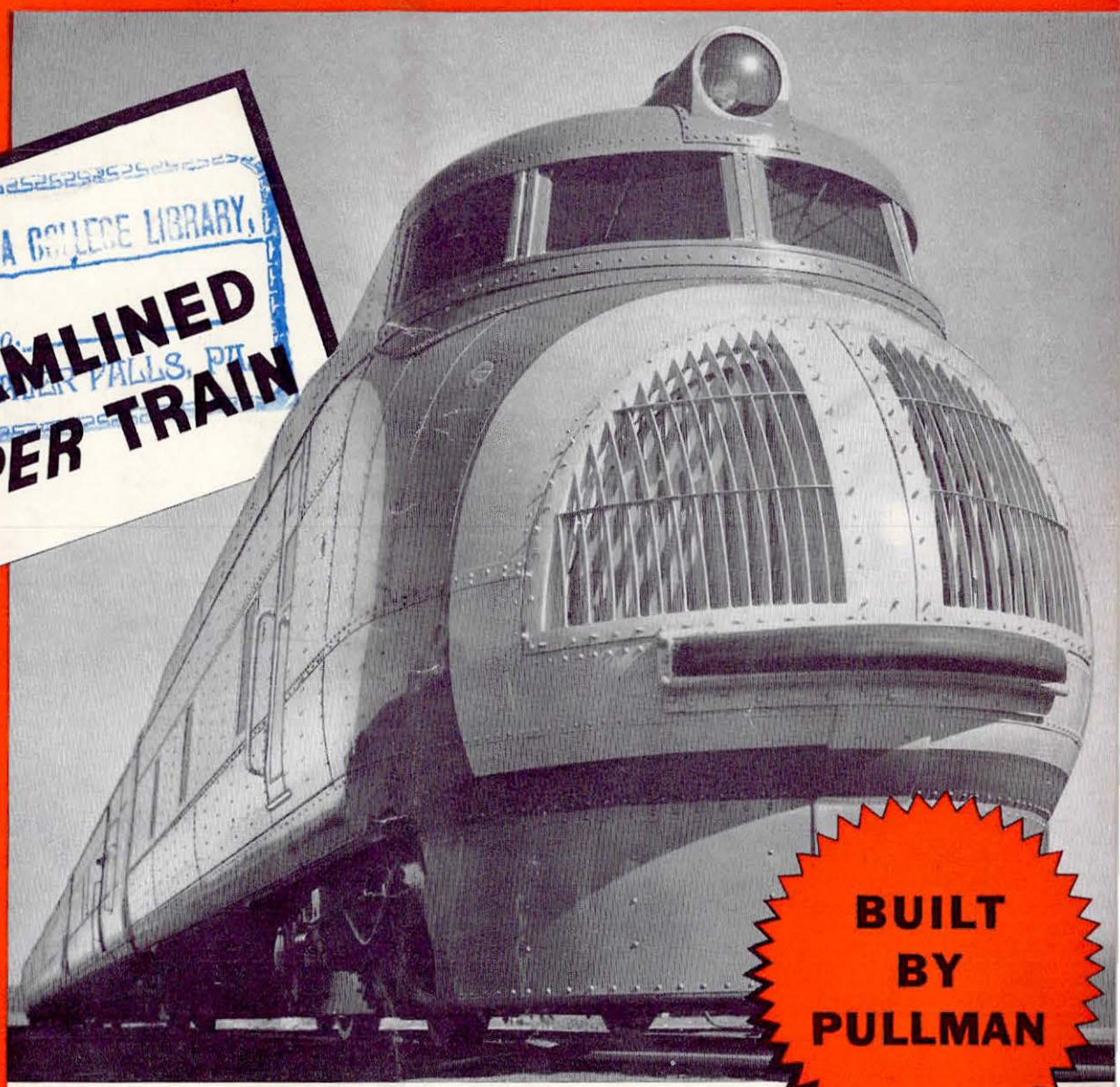
OCTOBER 13, 1934

Railway Age

FOUNDED IN 1856

GENEVA COLLEGE LIBRARY
No.
BEAVER FALLS, PA.

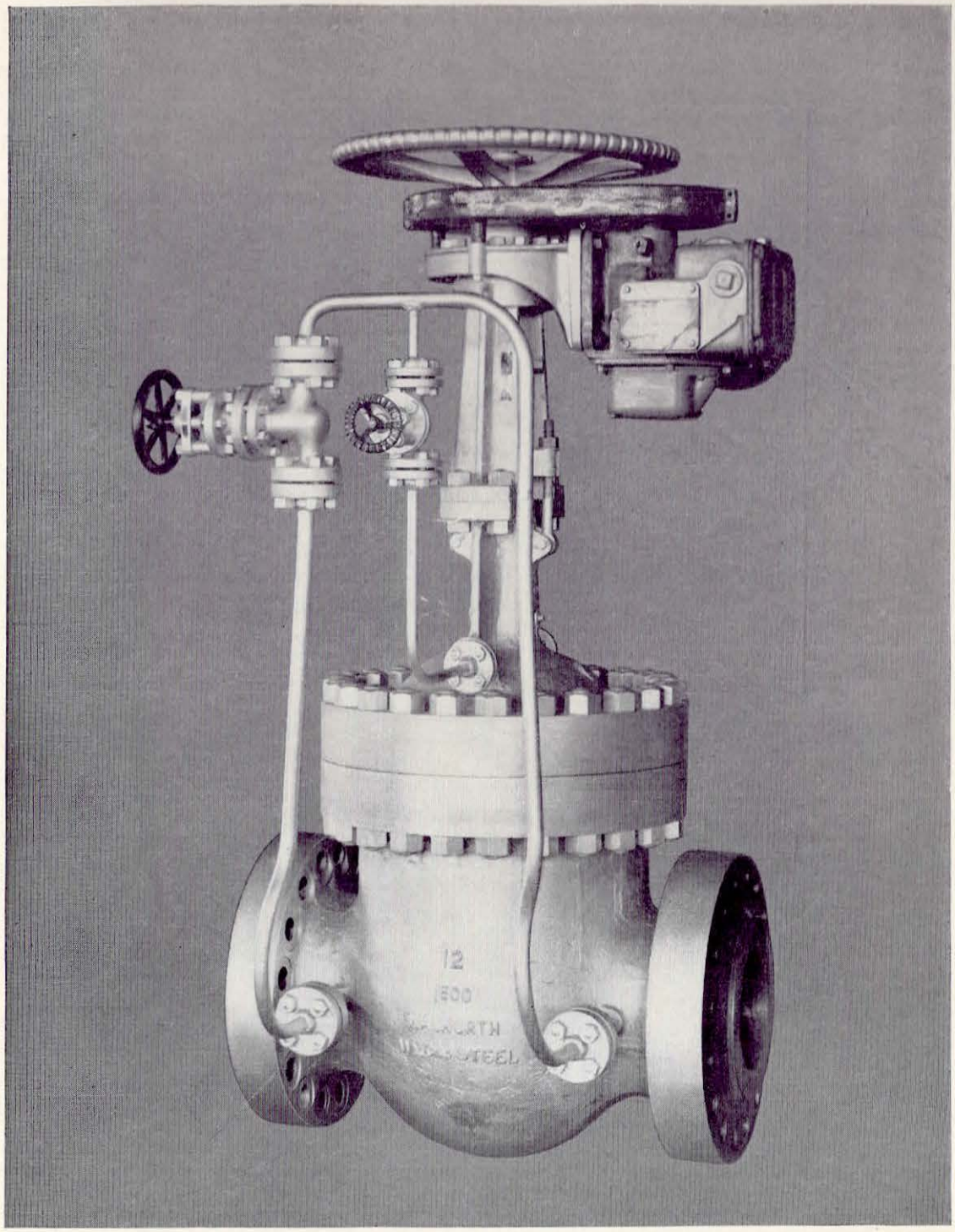
first STREAMLINED SLEEPER TRAIN



BUILT BY PULLMAN

Six-car, light-weight streamlined train just delivered to the Union Pacific System . . . the first streamlined train with sleepers for transcontinental service. • Weight of the entire train is but one third that of an equivalent conventional train.

PULLMAN
CAR & MANUFACTURING CORPORATION
Chicago • San Francisco • Washington • Birmingham



(Photo not retouched)

A 12" WALWORTH CHROME MOLYBDENUM SIGMA STEEL MOTOR OPERATED GATE VALVE WITH EQUALIZING BY-PASS FOR 1500 POUNDS WORKING STEAM PRESSURE AS RECENTLY FURNISHED A LARGE CENTRAL POWER STATION.

WALWORTH

VALVES FITTINGS and TOOLS
Backed by 91 Years' Service

WALWORTH COMPANY
60 EAST 42nd STREET, NEW YORK

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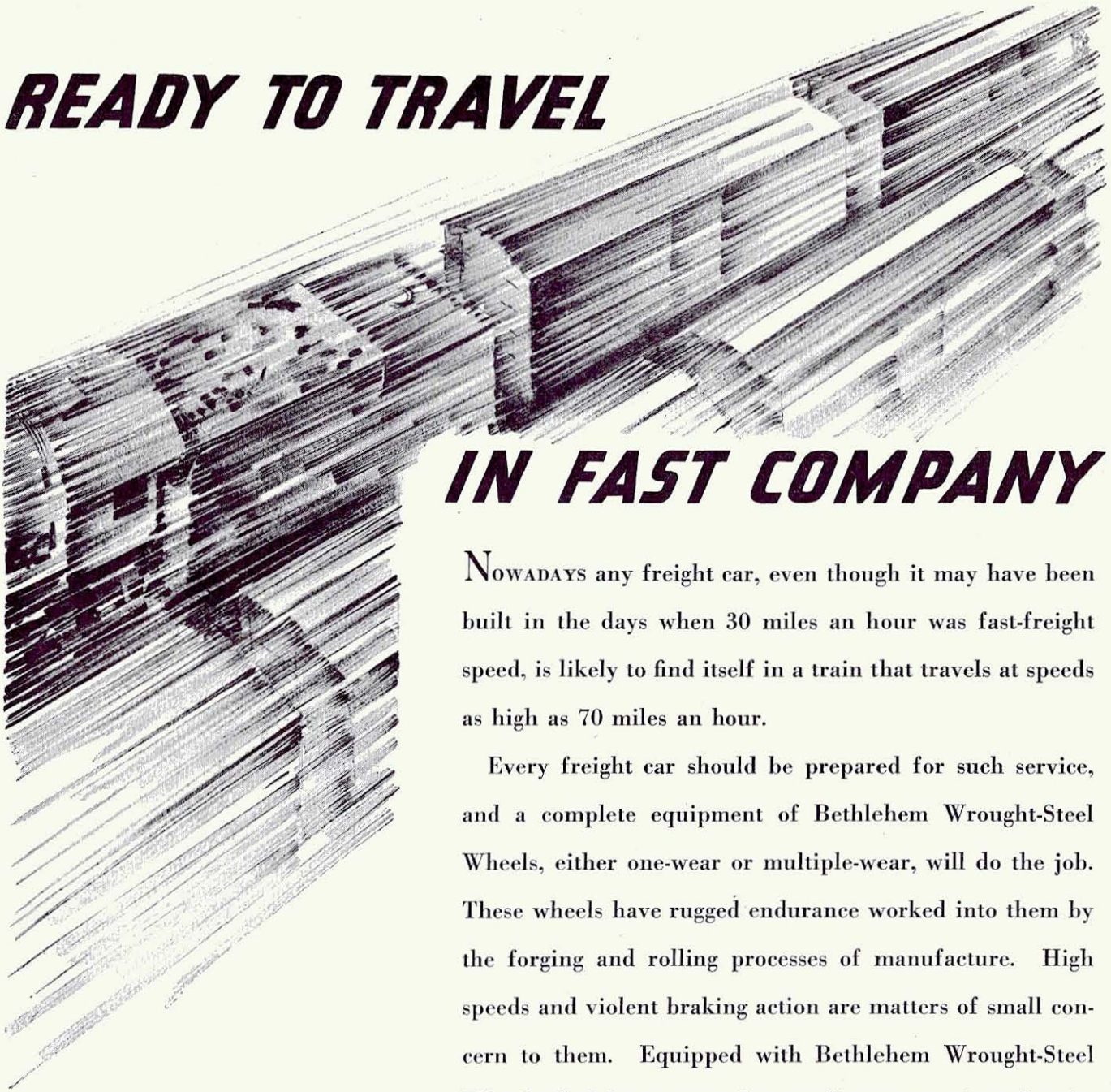
Published weekly by Simmons-Boardman Publishing Company, 1309 Noble Street, Philadelphia, Pa. Entered as second class matter. January 4, 1933, at the Post Office at Philadelphia, Pa., under the Act of March 3, 1879.

READY TO TRAVEL



IN FAST COMPANY

NOWADAYS any freight car, even though it may have been built in the days when 30 miles an hour was fast-freight speed, is likely to find itself in a train that travels at speeds as high as 70 miles an hour.

Every freight car should be prepared for such service, and a complete equipment of Bethlehem Wrought-Steel Wheels, either one-wear or multiple-wear, will do the job. These wheels have rugged endurance worked into them by the forging and rolling processes of manufacture. High speeds and violent braking action are matters of small concern to them. Equipped with Bethlehem Wrought-Steel Wheels, freight cars are fit traveling companions for the swift high-wheel engines that so often pull present-day trains.

With their great strength and stubborn resistance to wear, Bethlehem Wrought-Steel Wheels will enable your freight cars to step along safely at the pace of this day and age—and with low wheel-maintenance.

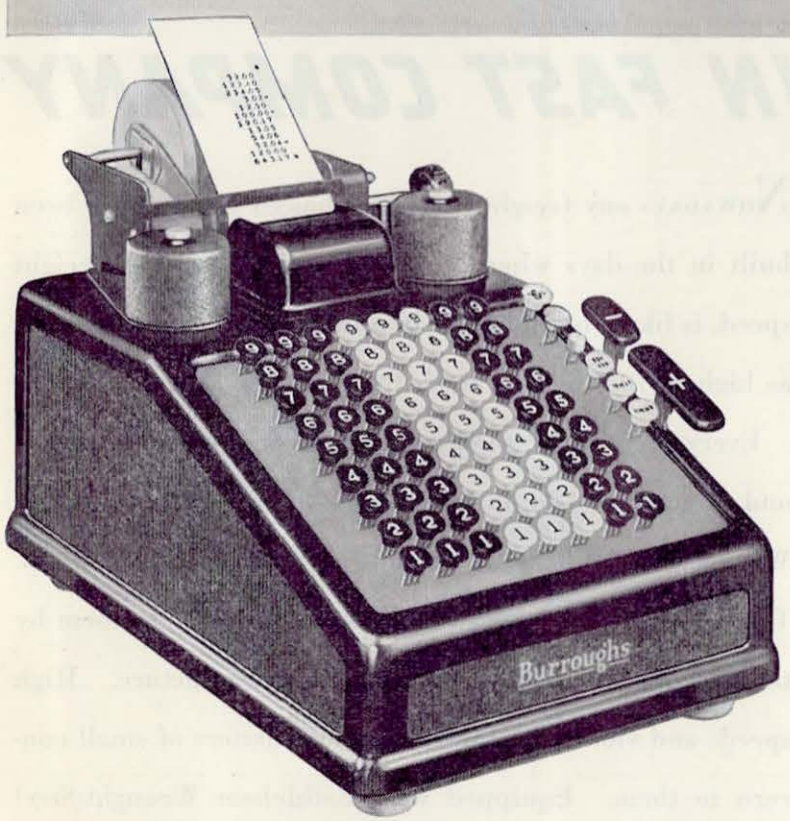
BETHLEHEM WROUGHT-STEEL WHEELS

BETHLEHEM STEEL COMPANY General Offices: Bethlehem, Pa.

Burroughs

SIMPLER . . FASTER

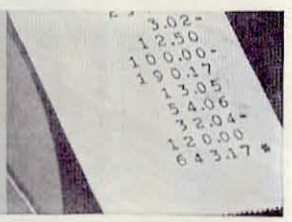
ELIMINATES NEEDLESS MOTIONS



Try this new Burroughs. You will like its speed . . . its simplicity . . . its ease of operation. It handles almost one-third of the average work automatically . . . see how much easier and faster you can list and add amounts by using the short cuts offered by the full visible keyboard. These important features are offered in over 90 different Burroughs models. There is a size and style for your particular needs—at a price surprisingly low. Send for descriptive folder.

BURROUGHS ADDING MACHINE COMPANY • DETROIT, MICHIGAN

NO CIPHERS TO WRITE

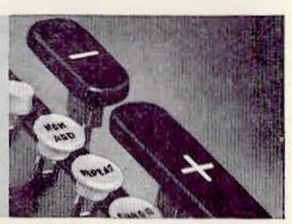


Burroughs prints ciphers automatically. There is no cipher key. Since figure work averages 30% ciphers, almost one-third of the figuring is done without touching a key.

SEVERAL KEYS AT ONE TIME

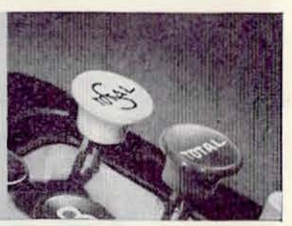
You can touch two or more keys at once. For example, write 4.67 with one stroke—not three; write 77 with one stroke—not two; write 5,870.00 with one stroke—not six.

SUBTRACTION AS FAST AS ADDITION



To subtract, touch the "minus" bar. To add, touch the "plus" bar. No other motions are required.

INSTANT TOTALS



To take a total, touch the total key. This one, single motion —not two or three—prints the total.

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ADD • SUBTRACT • MULTIPLY

ACCOUNTING AND CALCULATING MACHINES • TYPEWRITERS • CASH REGISTERS • POSTURE CHAIRS • SUPPLIES

Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name registered U. S. Patent Office.

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Single copies, 25 cents each.

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A report of this convention, at which discussions stressed the possibility of further reductions in accidents through the formulation and enforcement of rules and the training of employees.

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Co-ordinator urges government loans, regulation of all carriers, reorganizations and the elimination of subsidies.

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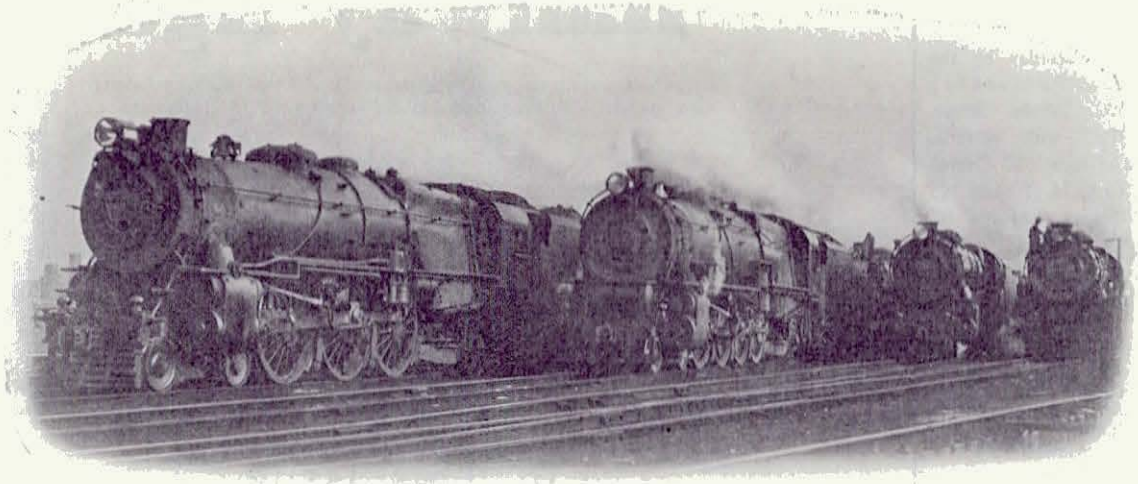


SURPLUS LOCOMOTIVES

not always what they seem

The railroads reported a surplus of 5,549 locomotives as of October 1, 1933.

BUT—of this number 80.1% were more than 13 years old, and therefore lacked in various degrees the efficiency and economy of modern locomotives.

We estimate that only about 800 of these surplus locomotives were capable of efficient and economical main line service under present conditions.

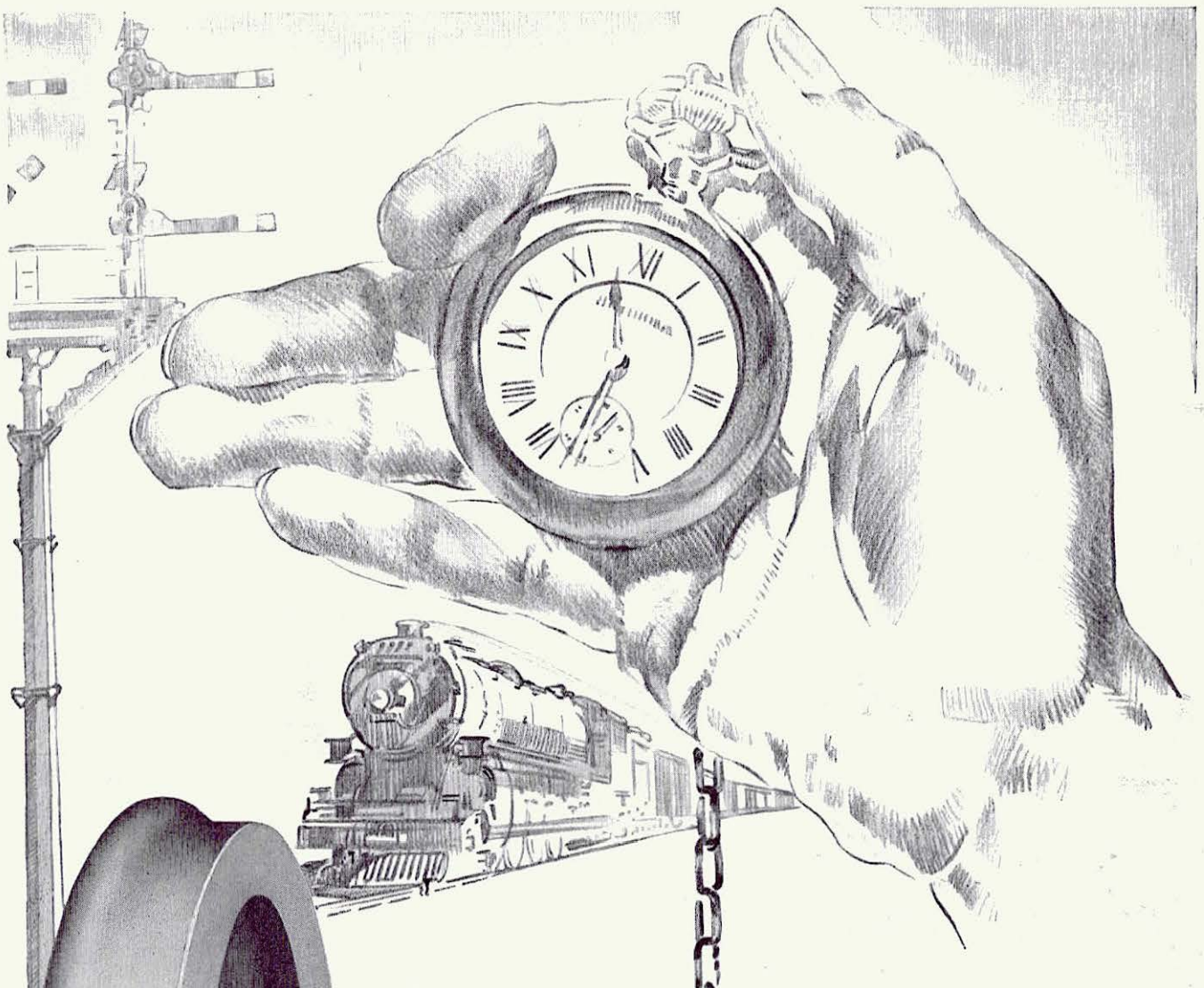
It will not pay to repair and return to service the great number of surplus locomotives which are already obsolete.

Obsolete locomotives should be replaced with modern power which will reduce operating and maintenance costs and yield increased earnings.

It takes Modern Locomotives to make money these days!

THE BALDWIN LOCOMOTIVE WORKS

PHILADELPHIA



A RAILROAD'S TIME IS NEVER ITS OWN

The whole art and science of railroading is devoted to operating on schedule. Many railroads are eliminating one element of uncertainty by specifying Illinois Wrought Steel Wheels.

Illinois Wheels are subject to the most rigid control of quality through every process in their manufacture—from open hearth to finished product. This means the elimination of defects, increased resistance to shock and impact, uniform resistance to braking wear.

You'll reduce lost time and reduce maintenance costs with Illinois Wrought Steel Wheels—now available in both Rim Toughened and Oil Quenched types. Our representatives will be glad to give full particulars as to metallurgy and production of these wheels.

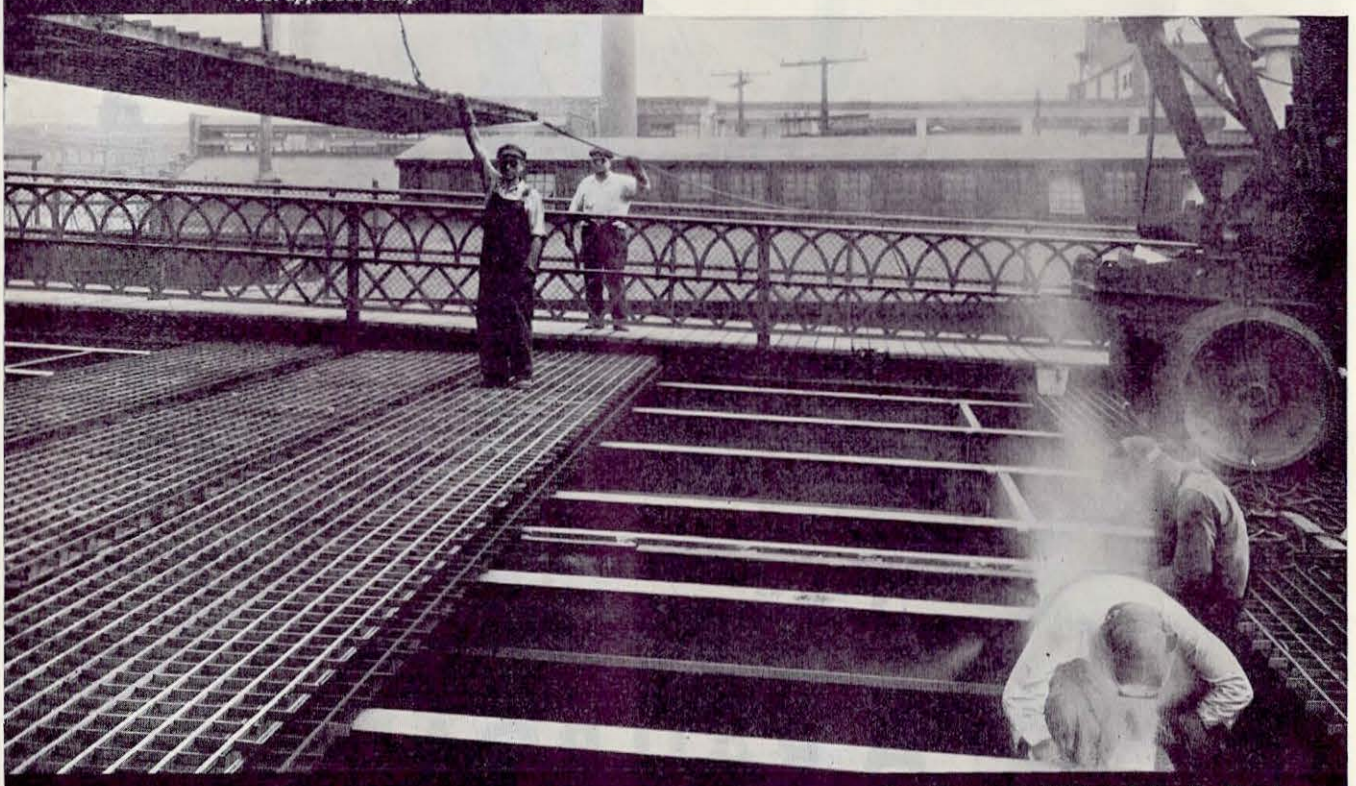
Illinois Steel Company
SUBSIDIARY OF UNITED STATES STEEL CORPORATION
208 South La Salle Street Chicago, Illinois

ILLINOIS WROUGHT STEEL WHEELS

RIM TOUGHENED OR OIL QUENCHED

Ready for the concrete.
West approach ramp.

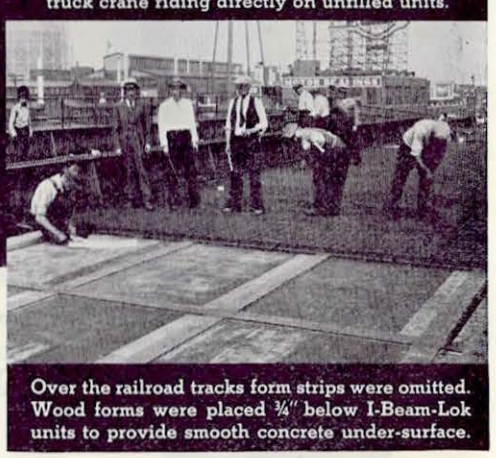
TOMORROW'S BRIDGE *To-day!*



Installing standard I-Beam-Lok units. Note heavy truck crane riding directly on unfilled units.

I·BEAM·LOK *Armored*

BRIDGE ROADWAY SLABS AND HEAVY DUTY FLOORS



Over the railroad tracks form strips were omitted. Wood forms were placed ¾" below I-Beam-Lok units to provide smooth concrete under-surface.

25,000 square feet of I-Beam-Lok—the first installation of this new, light, strong bridge flooring—was successfully used in reflooring the East Grand Boulevard Viaduct over the Grand Trunk Railway lines, Detroit. The work was divided into two contracts. The city portion included two sloping approach ramps 40′ wide, and the railroad portion over the tracks, two level roadways totaling 40′ in width. • I-Beam-Lok is particularly suitable for such reflooring jobs. In many cases no modification in the structure is necessary. In new work, the reduced dead load of I-Beam-Lok permits substantial savings in the cost of the entire structure. • Send for our new booklet, or better still, let our engineers discuss this truly important development with you.

TAYLOR & GASKIN, *Contractors, city portion*
WILLIAM E. LENNANE, *Contractor, railroad portion.*

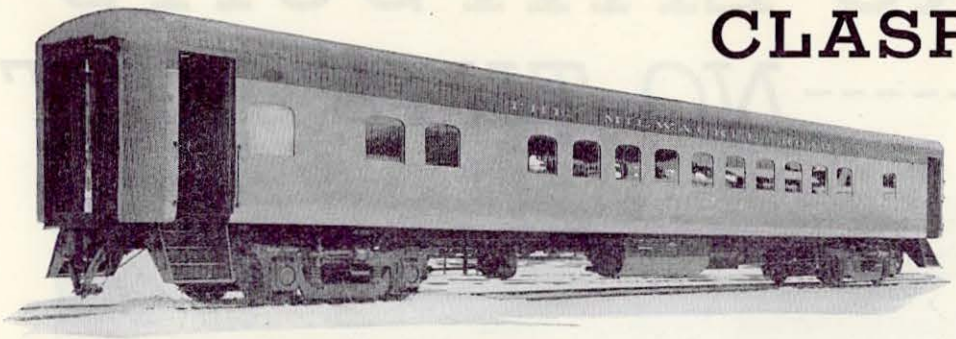
US STEEL

CARNEGIE
STEEL COMPANY
PITTSBURGH, PA.

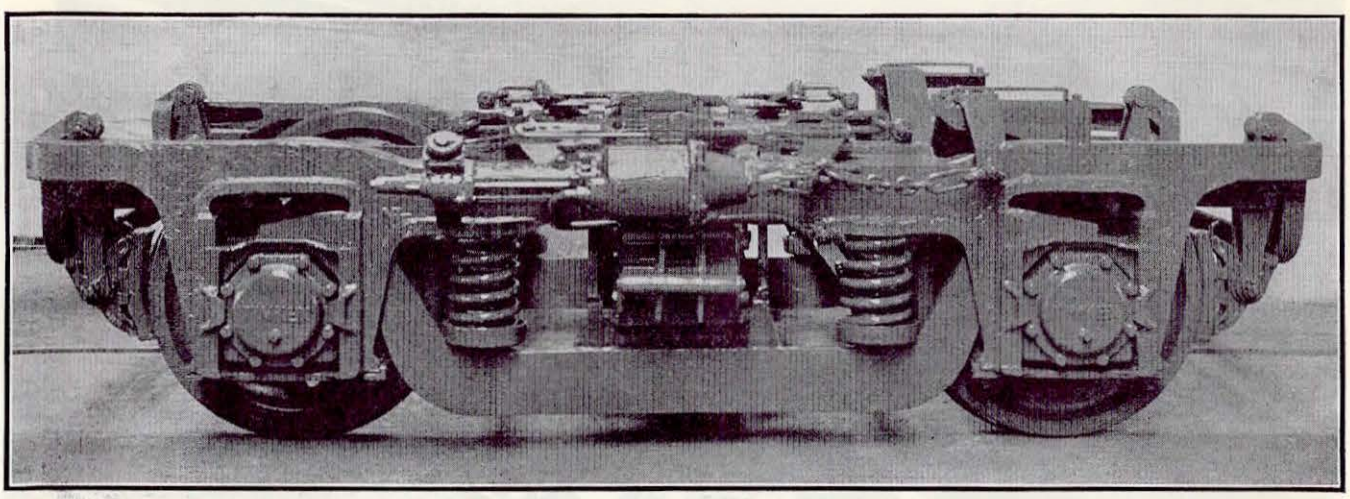
Subsidiary of United States Steel Corporation

292

SIMPLEX UNIT CYLINDER CLASP BRAKES



A new design of Simplex Unit Cylinder Clasp Brake being used on 50 high speed light weight passenger coaches of the Milwaukee Railroad.



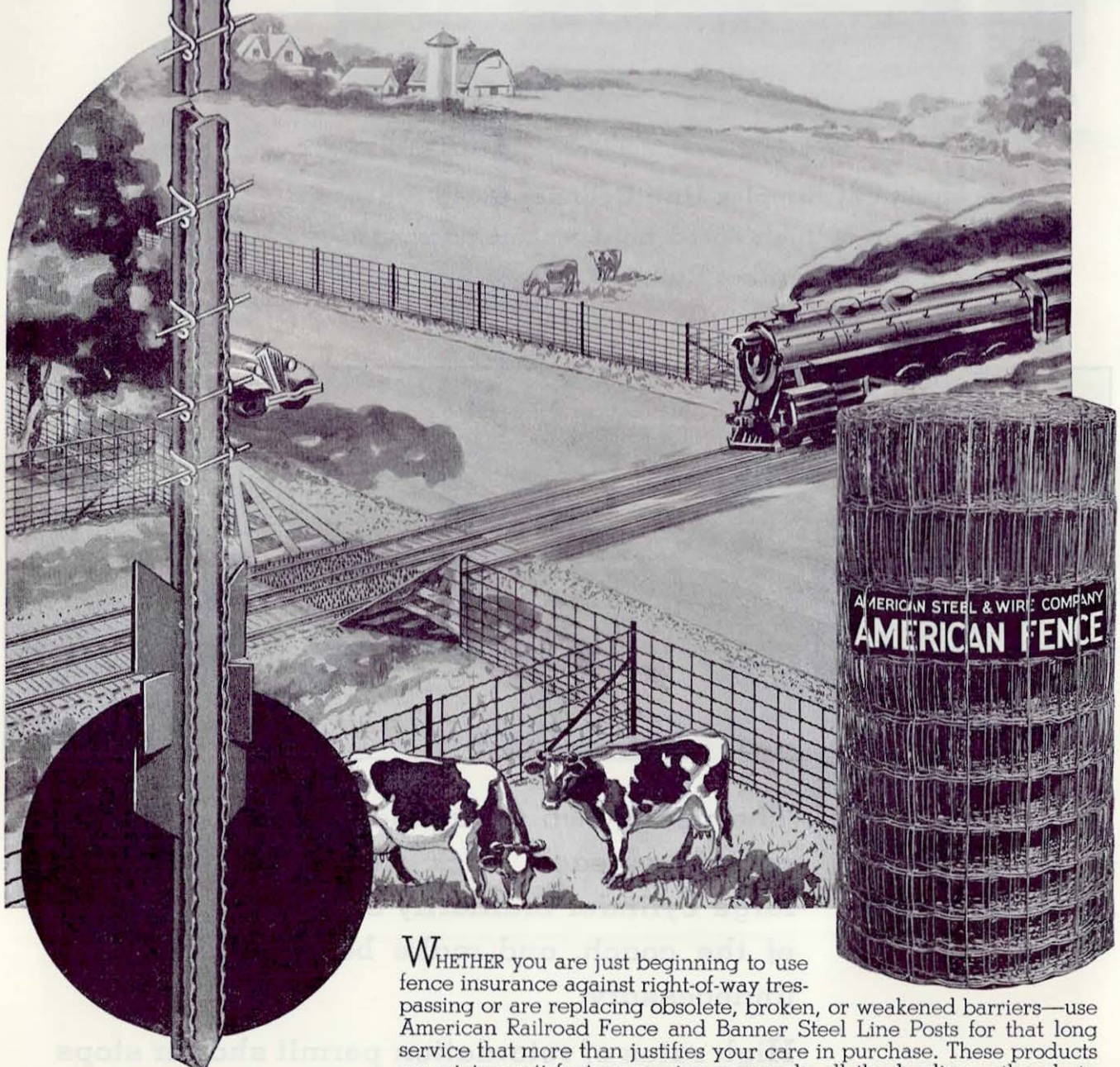
The use of two air cylinders attached to the outside of each truck frame, eliminate the large cylinder ordinarily secured to the body of the coach, and make body brake rigging unnecessary.

High rates of retardation permit shorter stops on account of pressure in brake cylinders acting directly on the brake levers, permitting higher scheduled speeds with safety.

AMERICAN STEEL FOUNDRIES

NEW YORK CHICAGO ST. LOUIS

NO LAWSUITS
------NO TIME LOST



AMERICAN RAILROAD FENCE
and
BANNER STEEL POSTS

WHETHER you are just beginning to use fence insurance against right-of-way trespassing or are replacing obsolete, broken, or weakened barriers—use American Railroad Fence and Banner Steel Line Posts for that long service that more than justifies your care in purchase. These products are giving satisfactory service on nearly all the leading railroads in the country. The use of American Railroad Fence and Banner Steel Posts is not only insurance against stock claims, but protection for life and property. Send for complete information on these products including National Expanding Anchor Dirt Set End and Corner Posts.

1831 MORE THAN 100 YEARS OF PROGRESS IN WIRE MAKING **1934**

AMERICAN STEEL & WIRE COMPANY

208 South La Salle Street, Chicago
94 Grove Street, Worcester

SUBSIDIARY OF UNITED STATES STEEL CORPORATION
AND ALL PRINCIPAL CITIES

Empire State Building, New York
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Rx Re-roof with Alcoa Aluminum

● Let us write you a prescription for re-roofing that is based on the reasons the old roofs have to be replaced.

Alcoa Aluminum cannot rust. It is not attacked by the sulphurous content of smoke. That means long and trouble-free life.

And Alcoa Aluminum gives you a big plus value, too. It saves about a ton in weight on every passenger car you re-roof. Over the hundreds of thousands of miles the Alcoa Aluminum roof will last, that smaller weight will show a real power saving. A ton-mile saved is a ton-mile saved!

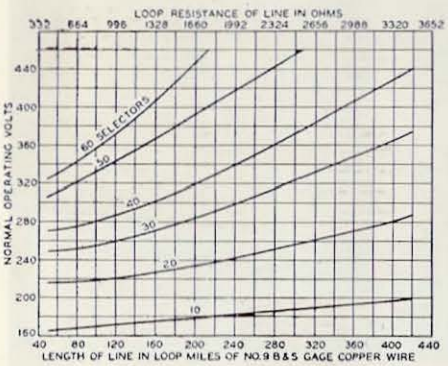
Another place you can defeat corrosion and save weight, too, is on ice-boxes and doors.

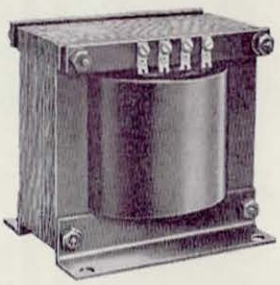
The *necessity* for reconditioning is an *opportunity* for improvement with long-lived, light Alcoa Aluminum. Its first cost is reasonable.

May we have one of our engineers bring you *all* the facts as to what is already being done, and what you can do, in better reconditioning with Alcoa Aluminum. Address ALUMINUM COMPANY OF AMERICA, 1878 Gulf Building, Pittsburgh, Pennsylvania.

ALCOA · ALUMINUM

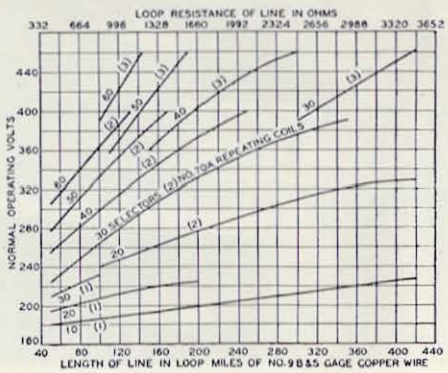
Transformer does the work of 2 or 3 repeating coils in Selector Calling





The 341A Transformer

At left, curves for No. 160 Type Selector Sets operated through a No. 341A Transformer. At right, voltage-line Selector Curves for No. 160 Type Selector Sets operated through No. 70A Repeating Coils.


LOOP RESISTANCE OF LINE IN OHMS
332 664 996 1328 1660 1992 2324 2656 2988 3320 3652
NORMAL OPERATING VOLTS
440 400 360 320 280 240 200 160
60 SELECTORS (2) NO 70A REPEATING COILS
40 SELECTORS (2)
30 SELECTORS (2)
20 SELECTORS (2)
10 SELECTORS (2)
40 80 120 160 200 240 280 320 360 400 440
LENGTH OF LINE IN LOOP MILES OF NO.9 B&S GAGE COPPER WIRE

By the introduction of its new No. 341A Transformer, Western Electric affords the railroads an opportunity to effect a considerable saving in the operation of their train and message circuits.

On long lines over which a large number of selectors are operated, one No. 341A Transformer will operate more satisfactorily than two or three No. 70A Repeating Coils.

In addition to high efficiency in repeating selector impulses there are such other advantages as:

1. A low resistance in the simplex Telegraph leg;
2. Operation of two or more simplex selector circuits from the common battery supply;
3. Operation of one or more branch selector circuits from the main selector circuit without metallic connection;
4. Permits of two selector circuits being used as side circuits for obtaining a composited or simplexed phantom with the physical and phantom telephone and telegraph circuits terminated at the same or different points.

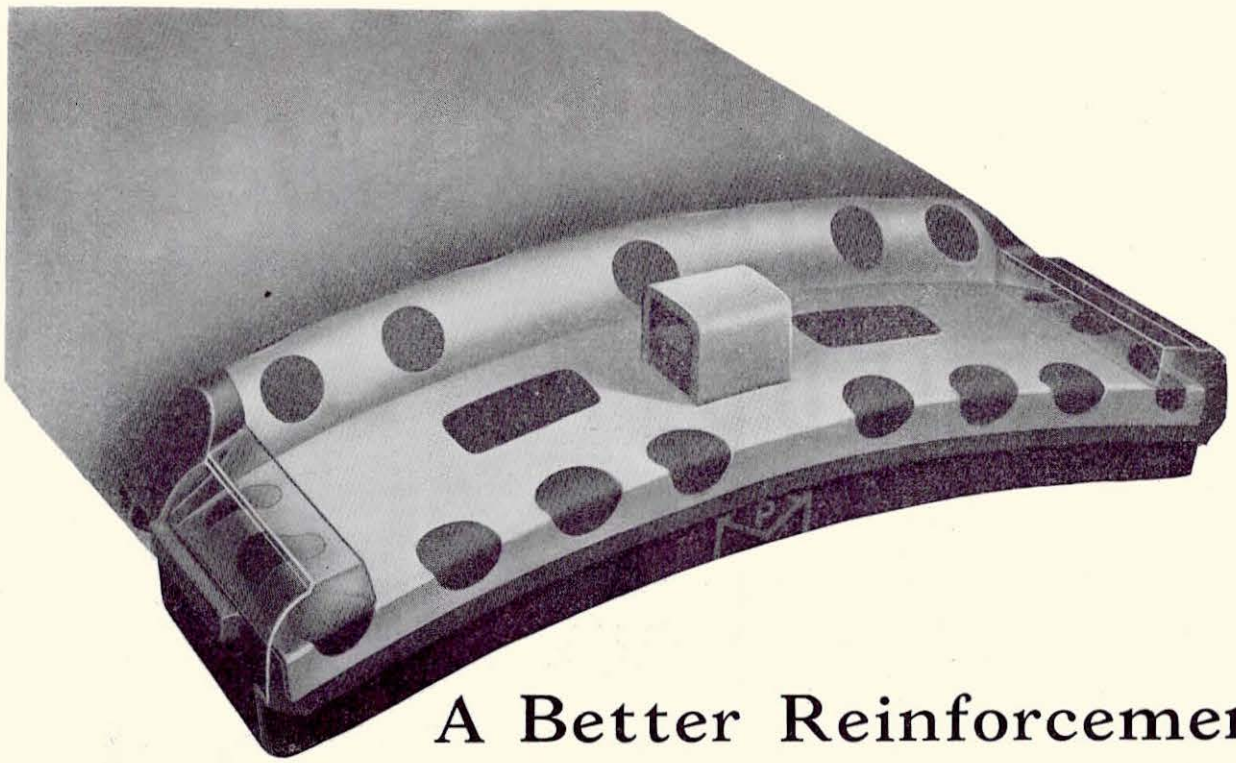
Like all other Western Electric Train Dispatching Equipment, this transformer is thoroughly dependable—made by the makers of Bell Telephones.

For further information, write to Graybar Electric Company, Graybar Building, New York, N. Y.—or telephone the nearest Graybar branch. The recently published Railway Train Dispatching Telephone Systems Catalog is yours for the asking.

Western Electric

TRAIN DISPATCHING TELEPHONE SYSTEMS

Distributed by GRAYBAR ELECTRIC COMPANY. *In Canada: Northern Electric Co., Ltd*



A Better Reinforcement *for* Driver Shoes

THE general use of the Samson Steel Back Reinforcement for driver brake shoes is one of the best indications of its greater efficiency.

When modern operating conditions brought higher speeds and heavier loads the punishment to driver brake shoes was increased, necessitating an improved method of body metal anchorage. To meet this need the Samson Steel Back Reinforcement was developed.

Years of experiment and actual service conclusively prove that the Samson Steel Back Reinforcement is a distinct improvement in Driver Brake Shoe Reinforcement.

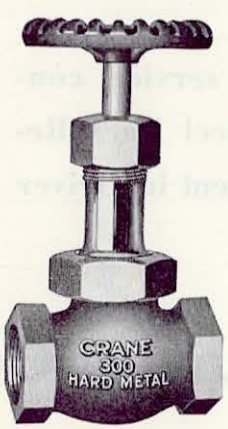
The American Brake Shoe and Foundry Co.

230 Park Avenue, New York
332 So. Michigan Avenue, Chicago

. . . FOR SEVERE SERVICE

• Crane Offers a Complete Line of Valves for Locomotive Use

Railroads have developed a degree of service hardship matched in no other industry. And so Crane has developed special materials and equipment to meet this demand. The 300-pound Brass Valves are designed specifically for such severe service as is met in throttling, soot blower, blow-off, boiler feed and drain lines. The bodies are made of Crane Hard Metal and the bonnets of special wear-resisting bronze. The metals in these valves are an ideal combination, offering unusual resistance to wear, temperature and galling—are harder, tougher and stronger than metals ordinarily used. These valves may be repacked when wide open and under pressure and may be reground without removing the body from the line. Here is a *complete* line of valves to match the hardest test that may be put to them in locomotive service. Be sure to specify Crane!



Crane No. 362 E Valve regrinding feature. For 300 pounds steam working pressures up to 550° F. Has hard metal body and disc, union bonnet of special new bronze. Can be reground without removing body from line.

CRANE

CRANE CO., GENERAL OFFICES: 836 S. MICHIGAN AVE., CHICAGO

NEW YORK: 23 W. 44TH ST.

Branches and Sales Offices in One Hundred and Sixty Cities

Crane No. 382 P Valve with plug type disc for 300 pounds steam working pressures at 550° F. Has Exelloy renewable seat, nickel alloy plug type disc, hard metal body and union bonnet of special wear-resisting bronze.

REMEMBER THIS

In Sturtevant Railway Air Conditioning Equipment you get:

1. The benefit of Sturtevant's 70 years of air engineering experience... including over 20 years of experience as the pioneer in complete air conditioning for comfort purposes.

2. The benefit of Sturtevant's experience in designing and building fans or coils for over 1500 passenger cars . . . a large percentage of all passenger cars already air conditioned.

3. The benefit of Sturtevant's experience in designing and furnishing equipment for many of America's foremost air conditioning installations... including one of the largest and the highest, the latter located on the 57th to 61st floors of the R.C.A. Building, Rockefeller Center, N.Y.

B. F. STURTEVANT CO., HYDE PARK, BOSTON, MASS.
Chicago, Ill., 400 North Michigan Avenue San Francisco, Cal., 681 Market Street
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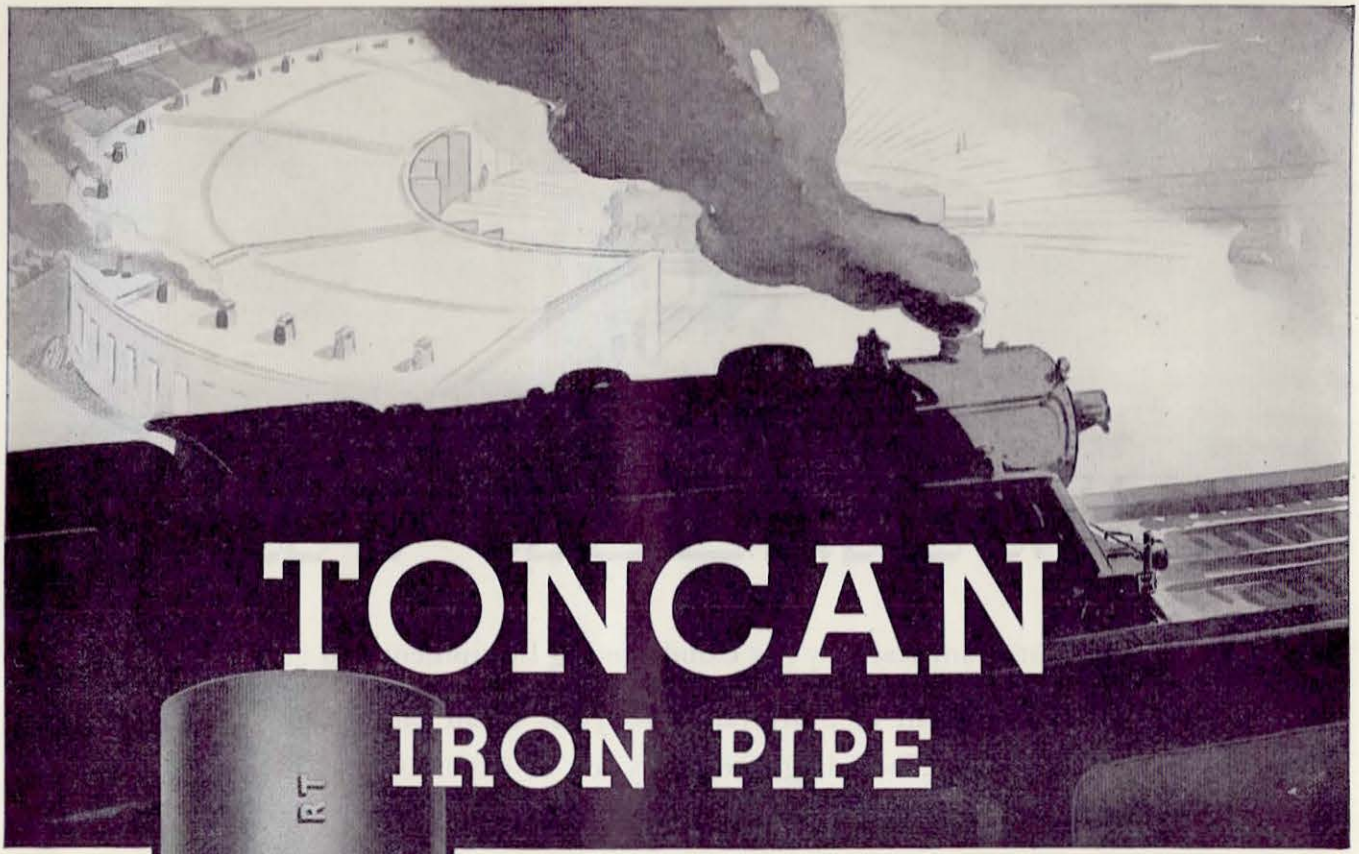
Sturtevant
REG. U. S. PAT. OFF.

PIONEER MAKERS OF AIR CONDITIONING EQUIPMENT



TONCAN IRON PIPE

HAS EXTRA PROTECTION TO MEET RAILROAD CONDITIONS

To the ordinary hazards of atmospheric rusting, railroad service added the corrosion of sulphurous smoke, cinders, brine and other destructive elements. » » » To withstand these successfully, pipe needs the extra protection of Toncan Iron. » » » By its superior resistance to rust and corrosion and its tough, homogeneous composition, Toncan Iron Pipe is well-prepared for any railroad service . . . Bury Toncan Iron Pipe in cinders, expose it to smoke and fumes in the roundhouse or use it wherever corrosion and rust are a problem. You will find this alloy of refined iron, copper and molybdenum giving longer life. Because of its homogeneous composition and freedom from scale there is no weak point in Toncan Iron Pipe to invite trouble . . . In train lines and wherever vibration is troublesome Toncan Iron Pipe stands up due to its fatigue resistance. This quality has been thoroughly demonstrated by the use of Toncan Iron for staybolts. Specify Toncan Iron Pipe for greater permanence.

REPUBLIC STEEL
CORPORATION
GENERAL OFFICES YOUNGSTOWN, OHIO

Carloadings Show Failure of "New Deal" Policies

Railroad freight car loadings, year in and year out, are the most dependable measure of general business conditions. They reflect good business, poor business and the results of efforts to improve the condition of business. For more than two years they have been telling a story of vital importance to everyone—the story of recovery from the depths of the depression and, more recently, of the "New Deal" administration's efforts to hasten that recovery.

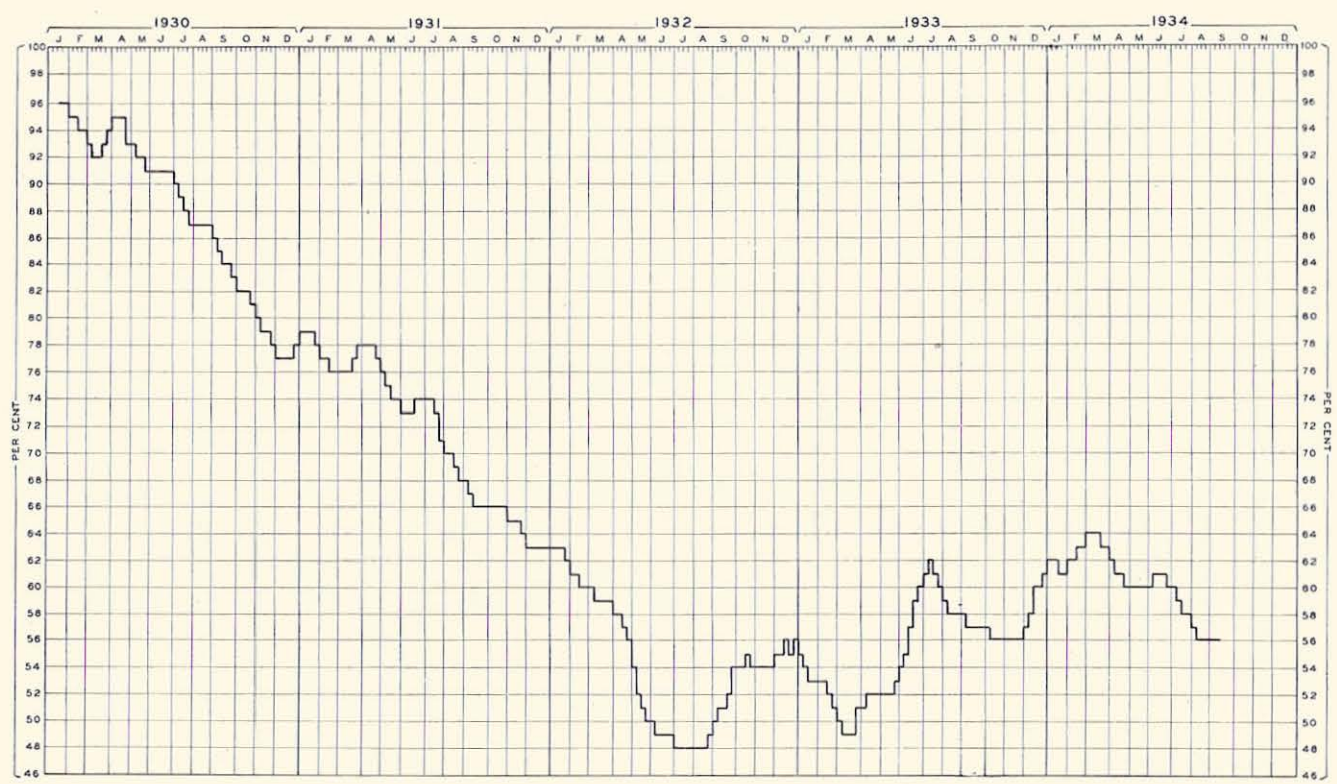
The chart reproduced herewith portrays, step by step, the retreats and advances of general business since the beginning of 1930. It shows the trend of revenue carloadings as related to the 1925-1929 average, on a basis designed to eliminate seasonal variations. It is the most accurate index of business conditions which can be prepared.

What does this chart show? It shows that the bottom of the depression was reached and passed in July and August, 1932. In those months, carloadings were down to 48 per cent of the 1925-1929 average. Business recovery began then. This was a natural recovery, uninfluenced by artificial conditions, and it continued to the end of the year. During two weeks in December, 1932, carloadings were 56 per cent of normal for those weeks.

The failure of the banking structure caused a setback during the first three months of 1933, and carloadings fell again. But even here the basic improvement of general business had so firmly set in that even the closing of all banks brought freight carloadings down only to 49 per cent of normal.

The banking crisis past, the natural recovery of business resumed its course, and for four months business steadily improved. Carloadings increased until in the middle of July, 1933, they were at a level of 62 per cent of the 1925-1929 average. It is important to remember that this improvement in business had continued, with only one interruption, for a full year, and that it was a natural improvement, unaffected by governmental policies.

On August 1, 1933, the first of the major New Deal policies designed to aid in the recovery of business was put into effect. It was the NRA. How did it affect business conditions? Railroad carloadings for the



Source: American Railway Assn., Car Service Division

The Trend of Revenue Car Loadings Related to 1925-29 Average
(Five-Week Moving Average)

months after July, 1933, show that the NRA affected business conditions strongly—in the wrong direction. A decline in carloadings set in which brought them down to 56 per cent of normal in October and November, 1933, as compared to 62 per cent of normal during the summer. Because of the NRA, general business in the late fall of 1933 was set back practically to where it had been a year before.

Huge governmental expenditures for so-called—and often loosely called—public works began late last year. Intended to "prime the pump" of general business, they did have the effect of starting the trend of carloadings upward again, and in March, 1934, a new peak was reached. In that month carloadings were 64 per cent of normal, relatively better than they had been in any month of 1932 or 1933.

This was recovery, but it was artificial, not natural recovery. It came about solely through the free-handed expenditure of public funds. It was the sort of recovery which could continue only so long as government money continued to pour out. It was not the sort of recovery on which to build hopes for the future.

Early in the spring of this year, not even a continuation of heavy government expenditures could overcome the growing lack of confidence in administration policies, and the relative rise in carloadings was succeeded by a decline. In May, 1934, carloadings were down to 60 per cent of normal. The decline continued, and in September of this year, carloadings had fallen to the point where they were only 56 per cent of normal for this season. The last drop in carloadings, from March to September, was the most extensive and long continued decline since the first half of 1932. In September of this year, therefore, general business was only slightly better than it was two years ago.

The facts are plain. After a year and a half of the New Deal and after the outpouring of billions of dollars of public money in furtherance of the New Deal's schemes to revive general business, recovery is no more advanced than it was two years ago. Far from helping business recovery, the policies of the New Deal have plainly hindered it and reversed an upward trend which, before the New Deal began, had continued with only one interruption for a full year.

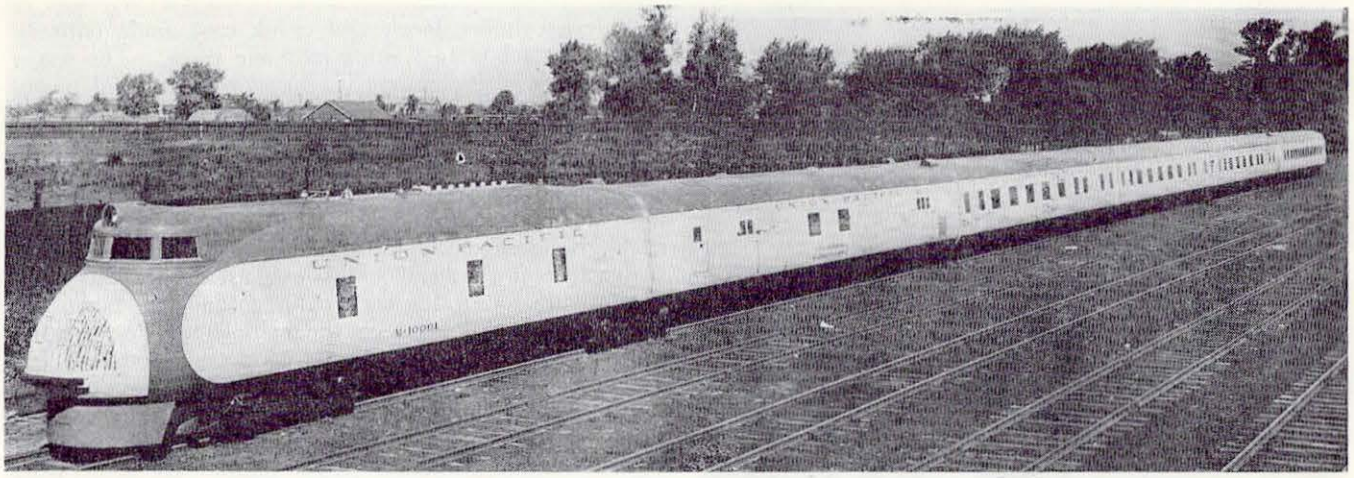
Railway Labor and Competing Transportation

Elsewhere in this issue we publish a communication from a locomotive engineer in which he disagrees with our criticism, published some months ago, of the railway labor organizations for their failure to support wholeheartedly legislation designed to correct the competitive handicaps which have reduced railway traffic and employment. He cites instances of activity by union members in behalf of fourth section modification and other legislation and concludes with the hope that, whatever one may think of the chief labor executives, at least the rank and file of union members should be given credit for hard work in support of legislation designed to increase railway traffic.

We heartily concur in this concluding expression. The *Railway Age* has never believed that the rank and file of organized railway employees were in any way opposed to or hesitant about supporting legislation designed to regulate railway competitors, and otherwise remove the unfair disadvantages which are diverting traffic from the railways. On the contrary, we are sure that most of them are enthusiastically favorable to such measures. What we fail to understand is why this attitude is not reflected with greater unanimity by the heads of the labor organizations. They must know how their members feel about the matter. Nevertheless, most of them continue to devote themselves primarily to their old technique of getting for their members as much as possible of what railway revenue there is—with very little concern as to whether that revenue is much or little.

The standard labor organizations in the West have been making a splendid fight in the interest of repeal of the fourth section of the Interstate Commerce Act, but even in this activity there is no unanimity. Their effort has been denounced by President D. B. Robertson of the Brotherhood of Locomotive Firemen and Enginemen. His advice to employees is that they should not work for such legislation unless the railways will concede the six-hour day, train limit legislation and the like. Mr. Robertson is an intelligent man and he knows, when he makes this stipulation, that it cannot be conceded and that to make it is, in effect, nothing more nor less than an out-and-out refusal to support fourth section repeal or any other measure which, while benefiting railway labor, would also aid the railways.

The great majority of railway employees, in our opinion, favor fourth section repeal and the regulation of the railways' competitors, and their view does not depend upon agreement with railroad managements upon other matters, which are unavoidably and perennially controversial. As one employee, a loyal union man, recently expressed it: "Our organizations have shown that they know how to get the railroads' money when there is any to get. Right now the trouble is that there is very little to get. The unions ought to help the railroads get all the traffic they can, because they know that most of the increased revenue will go to them." That is a realistic view of the situation with which, we believe, most organized railway employees will agree. Fifty per cent of six billion dollars, which railway revenues formerly totaled, is more money than sixty, or even seventy, per cent of the three billions they are earning now. The increase in traffic which would result from removing the railways' competitive handicaps would mean more in dollars and cents to organized railway employees than the six-hour day, the train limit bill or any other device for getting blood out of a turnip which labor organizations are supporting.



Union Pacific Six-Car High-Speed Train Ready for Service

U. P. Gets Second High-Speed Train

Six-car articulated Pullman-equipped unit is built of aluminum and driven by a 900-hp. Diesel engine

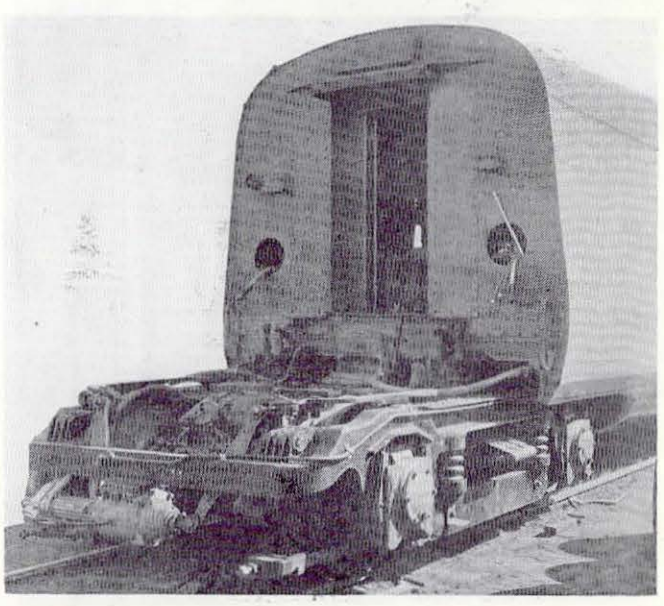
THE second light-weight, high-speed passenger train, ordered by the Union Pacific from the Pullman Car & Manufacturing Corp., has just been completed and delivered to the railroad ready for operation in transcontinental service between Chicago and the Pacific Coast. It is designed to operate efficiently and safely at high speeds and is expected to demonstrate the practicability of saving an entire business day in the service mentioned. This train is a six-car articulated unit, comprising a power car, a mail-baggage car, 3 sleepers and a coach-buffet car. It is the first Pullman-equipped streamlined passenger train to be placed in service in this country.

Aluminum-alloy construction is used throughout in the train, with the exception of the power plant, bolsters and end sills, and steel trucks, and the same general principles of design are followed as in the case of the first U. P. three-car high-speed train, which was described in the *Railway Age* of February 3, 1934. The six-car train differs from its predecessor primarily by the inclusion of sleeping cars, Diesel-engine drive and all auxiliary equipment mounted in a single power car; welded high-tensile steel trucks with clasp brakes; Pullman air-conditioning system with Frigidaire cooling units; improvements in certain details of structural design, including the articulated joints; and the provision of double windows, luggage racks and other additional interior equipment. The new train is 376 ft. long and weighs 210 tons, including all equipment, fuel, water, etc., which may be compared with an equivalent conventional steam train weight of about 700 tons.

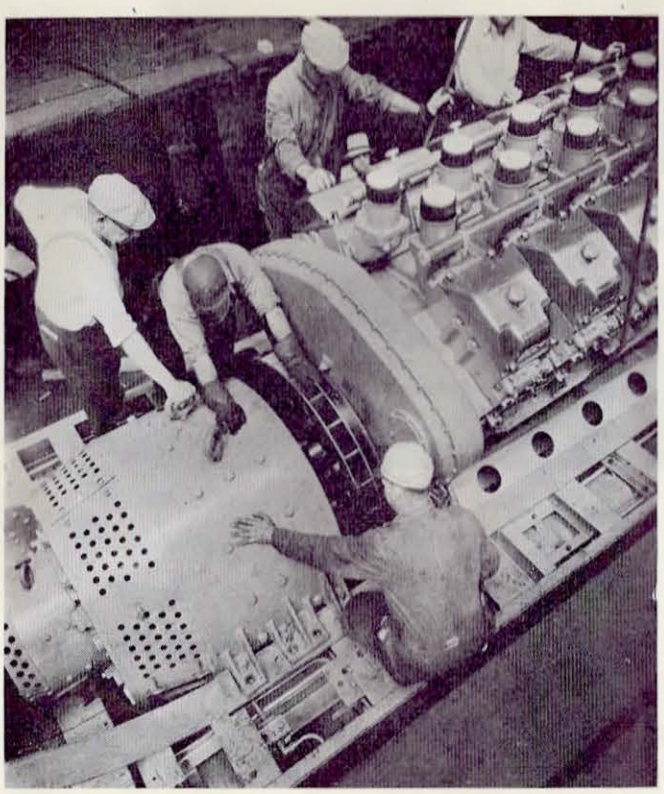
The first car of the new train, 48 ft. long, is devoted entirely to the power plant and auxiliaries. The second car is 64 ft. long and has 33 ft. for mail purposes, the balance of the car being utilized for a baggage compartment, and for the train-heating and air-conditioning equipment. The third and fourth cars are 64-ft. 24-passenger Pullman sleepers, with 10 sections, one compartment and one bedroom per car. The fifth car, also 64 ft. long, is equipped with 8 sections, one compartment and one bedroom, and has accommodations for 20 passengers. The sixth, or rear-end, car is practically 72 ft. long, being a 56-passenger coach, with a buffet in the rear end for serving light meals to passengers in their seats in the coach and in the Pullman sleepers. The total passenger-carrying capacity of the train is 124.

Power Supplied by a 900-Hp. Diesel Engine

The Winton 900-hp., 12-cylinder, two-cycle, V-type, Diesel engine used to drive this train is the first of its type to be used in American railroad passenger service. With 8-in. by 10-in. cylinders, the engine is designed to develop 900 hp. at 750 r.p.m., which may be compared with 600 hp. at 1,200 r.p.m. developed by the distillate-



One of the Power Trucks and Articulated Car Connections



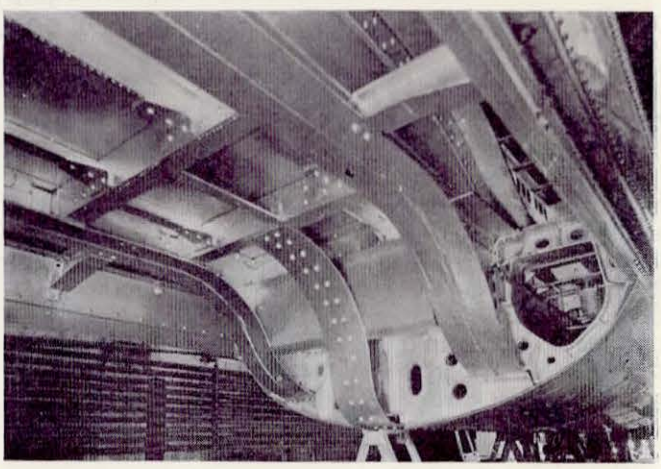
Winton 900-Hp. V-Type Diesel Engine and Direct-Connected G. E. Generator Being Installed in the Power Car

burning engine installed on the first U. P. high-speed train. The Diesel engine proper is 20 ft. in overall length and weighs 18,000 lb. The main generator weighs 11,700 lb., and the driving motors 26,400 lb. The weight of the entire power plant, including engine, generator, motors, auxiliary engines, generator sets, pumps, radiators, air compressors, etc., is approximately 79,000 lb.

Special features in the design of this Diesel engine include a cylinder block and crank case made entirely of rolled steel plate welded into one piece. The main frame work of the engine is, therefore, one solid piece, to which a light oil pan, cast-iron cylinder heads, and other accessories, are attached. Cylinder liners are of hard cast iron pressed into the welded steel framework and can be replaced without difficulty. In fact, all wearing parts of this engine are easily replaceable, thus promoting long engine life. Cylinder heads are of cast iron with valves in the heads. The exhaust connections have an individual pipe for each cylinder and are taken off vertically upward between the cylinders. The pistons are of aluminum alloy and the connecting rods are H-section drop forgings of alloy steel.

Electrical equipment, consisting of a General Electric generator, four traction motors and control, were designed for this particular power plant. The generator, which is directly connected to the engine, carries a built-in exciter, so designed that the current demand of the traction motors regulates the amount of generator voltage in such a manner that the load on the engine is constant at any car speed and solely under the control of the engine throttle. The traction motors, rated at 300 hp. each, are mounted, two on each truck of the power car, and geared to the wheels.

An auxiliary generator unit, consisting of a 4-cyl., 5-in. by 7-in., 2-cycle oil engine, directly connected to a 220-volt a-c. generator, is provided to furnish power for the auxiliaries, control, lights, air-conditioning equipment, heaters, pumps, etc. The auxiliary engine is of the same general construction as the main engine. The electric system through the train uses 220-volt 3-phase current for all motors of ¼-hp. and over and 32-volt for motors under ¼-hp. and lights.



The Power Car Underframe

Looking Down the Aisle in One of the New Pullman Sleeping Cars

The Power Car—Trucks—Brake Equipment

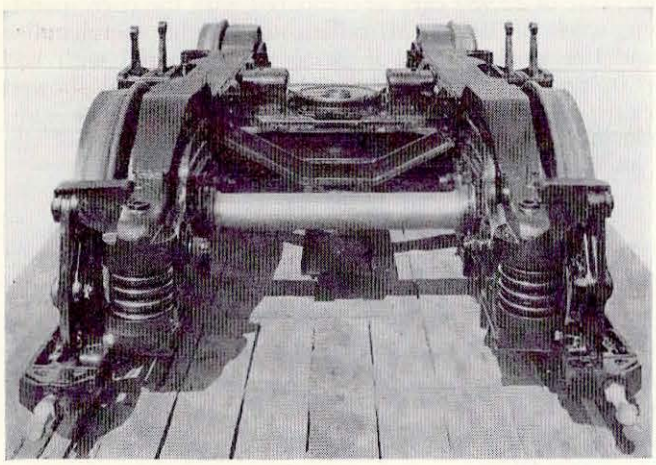
The power car weighs, fully equipped, 163,040 lb., or 81,800 lb. on the front truck and 81,240 lb. on the second truck. The bed for the main and auxiliary engine is formed of two aluminum plate girders, which extend from the rear end sill of the car to the front end, and frame into the floor construction at the front end. The floor-line construction forms the center of the curved front end and all of the sectional members converge to form a strong parabolic arch which should resist, without damage, the shock of any collision possible at highway crossings. Provision for the application and removal of the main Diesel engine and other large pieces of equipment in the power car has been developed to suit the requirements of this train. The superstructure of

the car is removable at the side and end sills and, by removing the fastenings at the sills, the entire superstructure can be lifted off the underframe and apparatus deck.

All trucks on the six-car train are of the four-wheel type, with welded frames of high-tensile steel, made by the Pullman Car & Manufacturing Corp., and having rolled-steel wheels and axles. The first two trucks have 36-in. wheels, equipped with roller bearings placed outside, in order to provide space necessary for the driving motors. The armatures are also on roller bearings, being wound for a high maximum speed. The remaining five trucks have 33-in. rolled-steel wheels and inside-type roller-bearing journals to reduce the truck width and minimize air resistance. All roller bearings are liberally oversize for the weight and speed requirements of this train.

The air-brake equipment for this train was especially designed and built by the New York Air Brake Company and features the use of the Decelakron control which is designed to assure stopping from exceptionally high speeds within the same or shorter distances than are now common practice with conventional steam trains. This is said to be accomplished without the slightest discomfort to passengers or the possibility of a development of slid-flat wheels.

In a number of respects, the new Pullman sleeping



One of the Welded Light-Weight Trailer Trucks

cars in this train differ from any such equipment ever previously built. An entirely new type of section is installed, providing increased privacy for the occupants of the upper and lower berths. The berths, intended for single occupancy, only, are arranged with partitions along the aisle which are constructed to permit air circulation and, at the same time, prevent those in the aisle seeing into the berths. A sliding door at the aisle partition affords the occupant of the lower berth all the privacy of a room. A rolling shutter forms the door for the upper berth.

Each of the upper and lower berths is equipped with an individual folding wash basin, illuminated shaving mirror, reading lamp, etc. Over the doorway at the lower berth is a curved curtain rod on which a curtain is hung at night. When the sliding door to the lower berth is open, a standing dressing space is thus provided for the occupant of the lower berth. This curtain drops against the berth partition when the sliding door is closed. The bottom of the curtain has a toe guard to prevent injury to the person occupying the berth, from anyone passing through the aisle of the car. The upper berth has a permanent stairway at night which provides

The Upper and Lower Berth Arrangement with Folding Stairway Which Gives Entrance to the Upper

a dressing platform at the top for the occupant of the upper berth. This platform is covered by a curtain, giving privacy for anyone using it and the stairway folds up out of the aisle when not in use.

This new berth arrangement has been developed by the Pullman Company to provide passengers with the

Folding Individual Wash-Stand and Arm Rest Which are Featured in the New Sleeper

maximum comforts and privacy and is used for the first time on this train. The seats in the sections and rooms are the latest adjustable type, developed by the Pullman Company. They are equipped with folding arm rests for use in daytime travel.

Each of the Pullman sleeping cars has a bedroom and a compartment at one end, providing accommodations for two passengers in each, with toilet equipment of modern type. Three toilet rooms for men are located at one end of the cars and two for women at the opposite end. The toilet rooms have the most modern type of sanitary equipment and fittings.

The floors of the sleeping cars are Pullman arch-type, made of aluminum-alloy sheets with composition flooring on top. Over the composition in the body of the cars and in bedrooms, a carpet is laid. The toilet rooms and passage-ways adjacent thereto have linoleum laid over the composition flooring.

To insure maximum safety for passengers, all windows are glazed with safety plate glass. As an additional insulating feature, the sash are double-glazed with two panes of glass in each sash. To prevent fogging of the windows, the air between the glass is dehydrated and sealed before the sash is applied to the car. The laminated safety glass is provided with water white glass for the lamination next to the enclosed air space, which further prevents fogging of the glass in the enclosed air space. Where opaque glass is used in the toilets, etc., it is placed on the outside and the safety glass on the inside of the car to afford protection to passengers. The windows in the power car, as well as all outside doors throughout the train, are glazed with single panes of safety glass.

The lighting of the Pullman sleeping cars has been developed to suit the new design of the sections, with fixtures which harmonize with the type of decoration used. Each berth is equipped with a spotlight type of reading light which should add considerably to passengers' comfort by providing suitable intensity for reading.

Six-Car Train Air Conditioned Throughout

The air-conditioning system is that designed by the Pullman Car & Manufacturing Corp. especially for streamlined articulated trains and, in this instance, incorporates the use of the Frigidaire cooling unit. The sleeping cars and rear coach-buffet car are furnished with cooled air distributed through the cars by means of the ceiling duct which has outlets through the grilles and is returned to the air-conditioning compartment through the underfloor ducts on each side of the car.

The entire train of six cars, except the power car, is heated by means of hot air forced through underfloor ducts, one on each side of the car, and connected between cars, where required, by flexible bellows. The ducts have outlets into the car through grilles in the wainscoting and window capping. Air is returned to the heating generators through a ceiling duct on the center line of the cars where it is mixed with fresh air brought into the system from the outside of the cars.

One heating unit consisting of an oil-burning hot-air generating unit is located in the front end of the second or baggage-mail car. This unit furnishes heat for the baggage and mail compartments of this car only. One air-conditioning unit, located in the rear end of the second car, consists of two hot-air generating furnaces and two 5-ton refrigerating compressors, with the necessary blowers and apparatus for furnishing conditioned air to the third and fourth cars which are Pullman sleepers. A similar unit is located in a compartment in the rear end of the fifth car to furnish conditioned air to the fifth car which is a Pullman sleeper and to the rear buffet coach.

Ventilation of the baggage-mail car is furnished by streamlined exhaust ventilators in the roof and ventilators in the bottom window-sash rail. The blowers in the heating unit can also be operated, if desired, to supply fresh air to these compartments in summer. The toilet rooms have streamlined exhaust ventilators in the roof. The air-conditioning systems for the passenger-carrying cars are under thermostatic control. A thermostat in the main compartment controls the heater for the baggage-mail car. The engineman's cab in the front end of the power car is equipped with a hot-water heater, taking hot water from the main engine jacket.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended September 29 showed a slight increase as compared with the previous week but failed to set a new peak for the year. The total was 644,647 cars, an increase of 1,527 cars as compared with the week before but a decrease of 24,539 cars as compared with the corresponding week of last year. It was, however, an increase of 22,989 cars as compared with the corresponding week of 1932. Miscellaneous freight, merchandise and live stock showed increases as compared with last year, and miscellaneous, merchandise, and coal showed increases as compared with the week before. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, September 29, 1934

Districts	1934	1933	1932
Eastern	133,034	141,925	140,823
Allegheny	113,834	125,577	110,535
Pocahontas	46,169	52,092	43,783
Southern	91,830	94,723	91,645
Northwestern	96,032	99,720	80,049
Central Western	104,596	100,437	99,282
Southwestern	59,152	54,712	55,541
Total Western Districts	259,780	254,869	234,872
Total All Roads	644,647	669,186	621,658
Commodities			
Grain and Grain Products	32,601	31,558	39,515
Live Stock	30,488	22,252	22,184
Coal	122,781	132,746	129,442
Coke	5,209	7,516	4,591
Forest Products	22,962	25,760	19,152
Ore	21,868	35,584	6,052
Merchandise L.C.L.	164,564	175,787	179,184
Miscellaneous	244,174	237,983	221,538
September 29	644,647	669,186	621,658
September 22	643,120	659,866	595,604
September 15	645,986	660,086	587,246
September 8	562,730	577,933	501,537
September 1	645,780	673,778	561,325
Cumulative Total, 39 Weeks	23,308,799	21,614,680	20,972,692

Car Loading in Canada

Car loadings in Canada for the week ended September 29 totaled 50,547 cars as compared with 51,610 for the previous week and 51,229 for the same week last year, according to the compilation of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
September 29, 1934	50,547	19,306
September 22, 1934	51,610	19,495
September 15, 1934	53,564	19,923
September 30, 1933	51,229	19,912
Cumulative Totals for Canada:		
September 29, 1934	1,699,096	848,968
September 30, 1933	1,451,422	714,830
October 1, 1932	1,626,874	742,760

Rate Hearings to Be Held in West

Evidence as to need for increased revenues presented at Washington hearing

WASHINGTON, D. C.

TESTIMONY on behalf of the railroads in support of their petition to the Interstate Commerce Commission for an increase in freight rates was concluded on October 5 and an adjournment was taken to a later date, on which will begin a series of further hearings in western cities. The tentative schedule called for hearings before Commissioner Aitchison at Denver on October 26 and 27, at Salt Lake City October 29 to 31, at Portland November 2-3, 5-7, at San Francisco November 9 and 10 and possibly 12, at Chicago November 16 and at Washington November 26. At these hearings the testimony of many of the protestants will be heard and railroad witnesses will be cross-examined.

Commissioner Aitchison, who heard the testimony, made every effort to expedite the proceedings and much of the evidence was put into the record in the form of written statements which were not read. Most of the time at the first hearing was taken up in the questioning of traffic witnesses representing eastern, western and southern railroads, who explained in detail and answered questions by the representatives of the shippers as to the exact method of applying to various situations the schedule of increases proposed by the railroads in their petition. A considerable amount of misunderstanding was apparent as to many of the details of the proposed changes and Commissioner Aitchison said it would be necessary for the railroads to file supplements or an amended petition to make clear their exact intentions as to some items.

Because in the 15 per cent case in 1931 the commission had criticized the railroads for producing comparatively little testimony of traffic officers as to the effects of the proposed increase, the railroads in this case presented several traffic officers from each region, who explained the careful consideration that had been given to the matter by a traffic committee, without instructions from the executives except that they should find a way to increase revenues, and all of the witnesses testified that in their judgment the increases proposed on the commodities selected would produce greater revenues. They explained that efforts had been made to allow for the competition of other forms of transportation by exemptions or modifications, particularly as to the short-haul traffic for which truck competition is keenest. In addition to the estimates presented as to the amount of the increases by commodities, Commissioner Aitchison asked that similar figures be produced showing the increased revenue expected for each Class I railroad.

Following the testimony on behalf of the railroads generally and those of the eastern and western districts on October 1, 2, and 3, the hearing on October 4 and 5 was devoted mainly to that on behalf of the southern district roads. At the same time a beginning was made toward taking the testimony of shippers at a sub-hearing before Examiner McGrath of the commission in another hearing room.

Southern Roads Fail to Earn Fixed Charges For Four Years

"The railroads constitute the only system of transportation in this country that is a common-carrier system, a system that holds itself out to transport for everyone every kind of freight that may be offered for movement to and from all points at all seasons of the year. Such a system of transportation must be supported. The railroads are here asking that they be given an opportunity of maintaining their solvency, and of surviving until an era of better times appears, when they will share, as other industries will, in the return of more prosperous conditions," testified L. A. Downs, president of the Illinois Central System.

"The depression began, so far as the Southern railroads are concerned, not in 1929 but in 1926," said Mr. Downs. "The gross revenues of the Southern carriers began to decrease in 1927 and their net railway operating income in 1926. Their net railway operating income in 1929 was actually some $36,000,000 less than it was in 1925. The Southern railroads have needed during the last six years a sum around $87,000,000 annually to meet their fixed charges. They will have failed for four consecutive years to earn their fixed charges in full. The railroads in the Southern Region are confronted with a deficit for the current year of over $26,000,000 as compared with a deficit in 1933 of $16,000,000, and are further confronted with mounting costs of operation. If the restored rates of pay and the prevailing level of prices had been in effect in 1933, the deficit in fixed charges would have amounted not to $16,000,000, but to some $52,600,000, and would have exceeded by $4,000,000 the deficit in 1932. If the higher rates of pay and the present level of prices for materials had been in effect since January 1, 1934, taking also into consideration pension retirement reserves, the estimated deficit for the year 1934 would be in excess of $54,000,000 and not $26,000,000 as now estimated.

"The railways will feel the full effects of the increases in the unit prices of materials and supplies and in the wage level in 1935. Their annual increase in operating expenses, reflecting these two factors in full and based upon a volume of traffic about the same as that which they are now transporting, will amount to about $40,000,000. The carriers are here asking that the traffic which they transport stand some part of the increased expenses that now confront them.

"The Southern railroads cannot obtain the amount of the increased cost of wages and materials, $40,000,000, or any substantial part thereof, by any additional savings in maintenance of way or maintenance of equipment," concluded Mr. Downs. "They are circumscribed by law from saving this amount or any substantial part thereof from their payments for labor. Public interest requires, therefore, that traffic which uses the rails pay a part of these increased expenses of operation."

Mr. Downs was cross-examined by R. C. Fulbright, J. Van Norman, Wilbur La Roe, Jr., former Senator Brookhart, and John E. Benton, general solicitor of the National Association of Railroad and Utility Commissioners. In reply to Mr. Benton's question as to whether the increases would not divert traffic from the railroads Mr. Downs said it was the judgment of the best traffic men in the country, who had devoted their lives to the subject, that they would not result in any

more diversion than would occur for other reasons but that he knew of no figures made as to the extent of the probable diversions.

A question as to the extent to which the railroads have complied with Co-ordinator Eastman's recommendations precipitated a lengthy discussion, during which Commissioner Aitchison said the commission would give consideration to a request that Mr. Eastman be called upon to furnish for the record information developed by his studies, but his own suggestion was that Mr. Eastman be invited to send members of his staff who were qualified to testify and would be subject to cross-examination.

Mr. Downs said that the largest suggestion for economy had been contained in Mr. Eastman's report proposing the pooling of merchandise traffic and express, which had been referred to committees in each of the three regions consisting of three operating, three traffic, and three accounting officers. These had made a report, indicating differences of opinion between the co-ordinator's staff and the railroads, and the three Regional Co-ordinating Committees had conferred with Eastman's staff and arranged for further time for study by a committee of traffic vice-presidents. Another committee has now been appointed for further conference with the co-ordinator.

Mr. Downs pointed out that the railroads were prohibited by the law from effecting economies at the expense of labor and when he was asked if the roads had taken any steps to get Congress to change the law he said they had not but that Mr. Eastman had made some proposals to that end. Commissioner Aitchison pointed out that Congress had adjourned before any conclusion had been reached on the pooling recommendations. Mr. Benton sought to inquire further into the discussions between the railroads and the co-ordinator and Mr. La Roe made the request that he be requested to put into the record such information as he has "in the premises," but Commissioner Aitchison ruled that communications between the regional committees and the co-ordinator are privileged until the co-ordinator has taken some action.

Former Senator Brookhart asked if the troubles of the railroads would not be cured if they were reorganized on the basis of the market value of their stocks and bonds. "If we could repudiate all our debts we could get along nicely," replied Mr. Downs, "but I would be the last to advocate that." Commissioner Aitchison asked why the railroads in their exhibits had used valuation figures based on the commission's tentative valuation of 1919 in Ex Parte 74 plus adjustments for the later period, rather than using the commission's final figures for later dates. He asked why the railroads had paid no attention to the later figures which the commission must take notice of under the law, and Mr. La Roe asked that they be required.

The Plan For Proposed Increases

Declaring that railroads in the South must have an increase in revenues if they are to meet increases in the cost of labor and materials, J. E. Tilford, chairman of the Southern Freight Association, testified that "if the existing freight rates and charges are increased by the moderate amounts now proposed, which meet only a portion of the increased cost of labor and materials, such freight rates and charges will not be unreasonably high."

In explaining why the railroads are seeking specific increases in rates on various commodities, rather than applying for a flat percentage increase upon all traffic, Mr. Tilford said: "Perhaps the fairest method for increasing freight charges to obtain needed revenue because of increased costs is a percentage basis which would cause all traffic to bear a proportionate share of the increases based on the amount now contributed by each commodity group. If this plan were followed, it is estimated an increase of between 10 and 15 per cent in the freight rates would be necessary to yield sufficient revenue to meet the increased expenses. After careful consideration, it was decided that this method was inadvisable for the following, among other reasons:

"First: It would largely ignore competition with other modes of transportation such as highway carriers, water carriers, and pipe lines, and would, in the judgment of the committee, in many instances cause a diversion of traffic to other modes of transportation sufficient to offset materially the increase in revenue which would be obtained on the remaining traffic.

"Second: The carriers in seeking increased revenue to meet increased cost of labor and material should endeavor to disturb as little as possible origin and market relationships on agricultural and basic commodities.

"Third: The carriers rely to some extent on the hope of a business recovery and increase in volume to meet a portion of the increase in expenses.

"While discarding the flat percentage increase method, the railways were firmly of the opinion that in submitting a method for increases which would take into consideration the reasons stated, it should be fairly uniform and consistent for application in all territories, the carriers believing that this would cause the least disturbance in commerce. Obviously, such a plan must represent the combined or composite judgment of traffic officers of railroads operating in widely separated territories in this great country, with different conditions, different classes of traffic, and varying interests. It should be equally obvious that since the primary or underlying purpose was to increase the carriers' revenues, these traffic officers would not suggest or recommend increases in freight rates unless in their judgment such increases would produce increased revenue.

"The proposed plan for increasing freight rates and charges not only had the painstaking consideration of the traffic committee of railroad executives having the matter in charge, but its suggestions and recommendations were presented to all Class I railroads and the opportunity given such railroads to consider and present their views with respect to the proposals. As the result of that consideration, many modifications were made in the recommendations of the traffic committee having the matter in charge before the proposals were presented to the Interstate Commerce Commission. This is mentioned to indicate the painstaking and conscientious efforts made by the railroads to propose increases in freight rates and charges that in the judgment of the traffic officers of such railroads would result in an increase in the gross and net freight revenues.

"It is the judgment of the traffic committee having this matter in charge and my judgment and sincere belief that the proposals will result in substantial increases in revenues, taking into account possible diversions to other modes of transportation, although the increase in revenues will, on the anticipated volume of traffic, fall short, and by a substantial sum, of the amount needed to meet the increased costs of labor and materials."

E. R. Oliver, vice-president of the Southern, said that in his opinion and that of the traffic officers of other lines in southern territory, the increases proposed are those that would produce increases in revenue. He said the southern lines had made many reductions to meet competition, some of which had been effective and some of which had not, and that the railroads expected to pub-

lish the increases proposed but did not expect to "freeze" the rates and would make any necessary changes if situations arise to warrant them.

Western Lines Testimony

F. A. Leland, chairman of the Southwestern Freight Bureau, H. C. Hallmark, freight traffic manager of the Southern Pacific, F. A. Cleveland, general freight agent of the Northern Pacific, F. H. Law, assistant to the vice-president in charge of traffic of the Illinois Central, and B. B. Beidelman, freight traffic manager of the Great Northern, gave traffic testimony on behalf of the western district lines. In expressing the opinion that the increased rates would produce increased revenue Mr. Law said that a check had shown for his road that the emergency rate surcharges allowed by the commission in 1932 and 1933 had had a good effect, even in a period of declining traffic, because the commodities on which the surcharge was applied declined in volume only 21 per cent while the others declined 25 per cent.

When Mr. Law referred to the proposed increase as "uniform" Commissioner Aitchison said there seemed to be many instances where "some individualistic viewpoints" had been applied to them.

In order that the testimony on behalf of the proponents might be completed on Friday, Milton W. Harrison, president of the Security Owners' Association, was requested to file his statement for the record, subject to cross-examination later, and it was understood that two additional witnesses for the association, J. L. Loomis, president of the Connecticut Mutual Life Insurance Company, and P. A. Benson, president of the Dime Savings Bank, would appear at the November hearing. Mr. Harrison emphasized that railroad investors are alarmed, not so much because railroad operating expenses have been increased by reason of governmental action and otherwise, as because such increases are imposed without sufficient consideration of the financial sources from which they are to be met and because elemental economic principles appear to be disregarded.

Security Owners Urge Immediate Constructive Relief

"Actual and potential investors in railroad securities are influenced to buy or hold those issues by a somewhat nebulous and undefined factor of confidence, pretty thoroughly shaken of late," said Mr. Harrison. "That confidence relates to the belief that since the government has committed to one of its agencies the power to regulate the rates of the railroads, and since that regulatory agency has restricted and limited the rates which railroads might charge in times of prosperity and easy money, there is implied the power and obligation of the government in times of adversity and under conditions unfavorable to the railroads to take all reasonable steps to protect and conserve railroad revenues.

"The confidence of investors has been based largely upon the belief that regulation meant stabilization of return. The drastic shrinkage in market values, and the actual or threatened cutting off of return on investments has shaken that confidence, but the belief that regulation must and does recognize its function still persists. Investors believe that this case presents an opportunity for regulation to exercise its proper function. If the faith of investors in regulation should be destroyed, it is difficult to see how private capital can in the future be depended upon to participate in the railroad industry.

"Railroad security owners are not so much concerned that operating expenses, by reason of various actions, governmental and otherwise, are being increased by what has been estimated to be approximately $1,000,000 a day, as they are concerned over the fact that such increases arise without sufficient consideration of the financial sources from which they are to be met. They are alarmed when elemental economic principles appear to be disregarded, and the financial foundations of one of the most basic industries, investments in which have long been surrounded with special safeguards, are seriously threatened by a condition of unbalance between income and expense. They believe that under present conditions neither the treasuries of the railroads in the aggregate nor those of the majority of the roads separately can meet such tremendous additional burdens as they are asked to assume. They believe that it is necessary to establish at once the indispensible balance between railroad income and railroad expense.

"Security owners naturally must look to and rely upon the managers who operate the roads for decisions as to the most practicable ways of augmenting revenues. They accept and support the judgment of such managers as to the proper means of meeting the situation which has arisen. This does not imply, however, that they believe that the anticipated realization from changes in rates under consideration here will by any means be sufficient. The crisis is such that, if the proposals here put forth by railroad managements are not accepted, something practically as good or better must be put forward as an alternative, which will produce correspondingly immediate results.

"My knowledge of the considerations which the owners of railroad securities are weighing enables me to say that they are impressed by the factor of immediacy present in the railroad situation. They believe emphatically in the necessity of immediate constructive relief. The importance of this factor of immediacy moves these security owners generally to subordinate their realization of the inadequacy of the measures now under consideration in the belief that any step toward the restoration of the proper equilibrium between railroad income and railroad expense would at least represent progress.

Railroad Capacity As a Relief Agency Exhausted

"It is their general view that the present plight of the railroads is partly chargeable to a general misapprehension of the proper economic and social sphere of the railroads. It has been a common assumption before and during the present depression that railroads, next to the government itself, should, in their case, by low rates and fares, come to the relief of hard-pressed industries and agricultural areas or distressed economic groups. Congress by resolution has itself expressed this idea. The important consideration is the extent of the application of such a principle. With the disappearance of the necessary margin between income and expense, railroad capacity as a relief agency has been exhausted. Unlike the government, the railroads cannot depend upon a potential future tax income to make up deficiencies. The railroads are still private enterprises and as such must derive their income from revenues accruing in the course of their business.

"Nor can the steady erosion and deterioration of the rate structure that has taken place in the past decade, in contrast to a recently rising price level, be overlooked. This attrition has been due largely to the severe uneconomic competitive relationships between carriers and shippers, regardless of long range destructive consequences.

"It is the view of investors that there is a marked tendency for shippers to overlook or ignore the fact that the same fundamental principles applicable to their own businesses must be adhered to if the railroads are

to maintain adequate service and a sound financial position. There is a point beyond which railroads cannot go in absorbing economic or competitive losses of industries or localities for which they have no responsibility.

"To say that the roads should not seek rate increases or take such other steps as they deem necessary to meet essential financial needs because other forms of transportation, either subsidized by government or left unregulated by it, may take business away from them, impresses security owners as merely begging the issue. They believe that in comparison with other forms of transportation the railroads have been placed at a basic disadvantage.

"We hear much of purchasing power and its importance, but to the present time discussion has been chiefly limited, so far as the railroads are concerned, to the wages of railroad labor. The important part which the railroads ordinarily play in stimulating employment in other industries—particularly the heavy industries which today are responsible for the major part of our unemployed—is to a large extent lost sight of.

"The importance to national recovery of stimulated employment in the capital goods, or 'heavy' industries is generally recognized. The federal administration has sought to meet the problem by wide-spread public works expenditures. Normally the railroads are among the most important customers of these industries. If, by virtue of reduced revenues railroads are forced further to contract their expenditures for materials and supplies, a severe handicap will be imposed upon recovery, and the interests of investors will be jeopardized further by deterioration of the property behind their investments.

"Not only is the purchasing power derived normally from railroad securities an important factor in our national purchasing power, but upon it largely depends the welfare of unknown numbers of individuals and dependent families.

"Investors neither have nor advocate a narrow view of the situation. They neither seek nor wish undue preference or advantage or any action which may mean injustice to any other interest concerned. To them the essential unity of the interests of the various parties concerned with the railroads is evident. They do not wish to see railroad workers deprived of any advantage, which sound economic principles can support. They do not wish to see shippers lose any reasonable advantage. Many investors believe, however, that a sound equilibrium as between the major interests concerned in the railroad situation has disappeared, and that patient, disinterested, and prompt effort will be necessary to restore it. These proceedings represent one of the steps necessary to that end."

In conclusion Mr. Harrison said he desired to make clear that no partisan view or aim is implied by what was presented on behalf of security owners. "We are not interested in any political aspects that the situation or these proceedings may have," he said. "In appraising the railroad emergency it seems clear that there are both immediate and remote causes. There is nothing different in essential character in measures recently enacted from many others which have been imposed upon the railroads one by one over many years. So far as there is any difference it is only in degree and in the fact of the culmination of the consequences of the many separate measures in the inevitable financial crisis. It, therefore, can be taken for granted that if responsibility were to be assessed it probably would be well distributed among all parties and interests and embrace a decade or more of time.

"Finally, it should be said that in a larger sense the position of railroad securities in comparison with other classes of securities will be very much affected by the action taken or not taken as a result of these proceedings. Many investors were led to believe that the securities of an industry so completely regulated by government should and would enjoy definite advantages in respect of security of principal, return on the investment and marketability. Most investors now think that this belief has not been justified by events. If, therefore, it is desirable to begin upon the restoration of railroad securities to the relative position they once enjoyed, and if it is important to be able to conduct railroad financing economically in the future, these proceedings are of fundamental importance as one step to that end. Unless there is general acceptance of the fundamental necessity of proceeding at once toward the economic rehabilitation of the railroads, there can be little basis for the expectation that they will play an important part in the economic recovery of the nation."

Short Lines Also Urge Rate Increase

J. P. Blanton, traffic manager of the American Short Line Railroad Association, said that, as the exhibit which had been introduced showed, many of the Class II and Class III carriers are now in receivership or trusteeship, due to steady decline in operating revenues, which has made it impossible for them to continue in their corporate capacities. So far as they have been able to do so, these carriers have reduced their operating expenses in line with their decrease in operating revenues. This, however, has failed to prevent a serious decline in their net income, because they have no control over their taxes, rental or car hire, joint facility expenses, and such items.

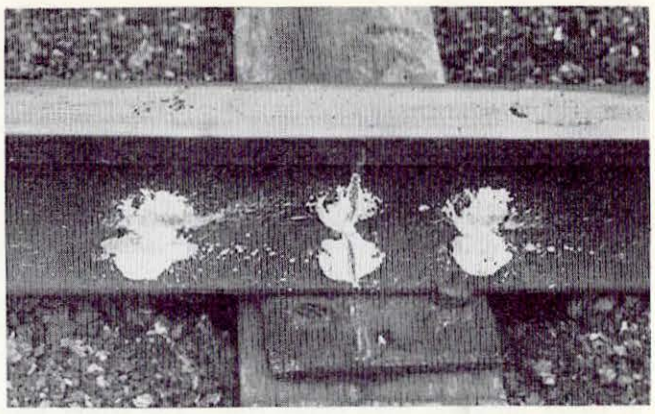
"Beginning about a year ago," he said, "these carriers have been faced with constantly increasing operating expenses due to the increase in the prices of materials and supplies. The increased cost of materials and supplies is equal to or greater than that of the Class I carriers, due, in some measure, to the fact that these small roads cannot make purchases in quantity lots as do the larger roads. By reason of scarcity of funds during the so-called depression period, these carriers now are faced with a very considerable amount of deferred maintenance of ways, structures and equipment, a proportion of which they are compelled to take care of immediately. Their present revenues are wholly insufficient to meet these expenses, and they must have additional revenues from some source. The only source from which they may be obtained is, of course, by an increase in certain of their freight rates.

"I should also like to point out that the commission has, in many of its decisions, recognized the financial disabilities and low traffic density of the so-called short line railroads, and has authorized permissive arbitraries for the short lines, to be added to the basic or standard line scale. However, in the Southern region especially, motor truck and cross-country competition have compelled the adoption of reduced arbitraries and, in some instances, the standard line basis. The short line railroads in the Southern region do not contemplate increasing their present arbitraries in the event an increase in the basic scale or rate is granted. Some of the short lines in other sections of the country do contemplate increasing their arbitraries to correspond with any increase which may be granted in the basic scale. On behalf of the short line railroads it is requested that, if the commission grants any increases in the basic rates, that it leave it permissive with the short line railroads as to whether or not they increase their arbitraries."

At the close of the testimony Arthur M. Geary, coun-

sel for the Northwest Livestock Shippers' Traffic League and other organizations, filed a motion that the case be dismissed as to products of agriculture, including livestock, and also one that the whole case be dismissed on the ground that the railroads had not made a prima facie case. J. S. Bohanan, representing the Secretary of Agriculture, read a statement outlining briefly the exhibits to be introduced at a later hearing by the department. Commissioner Aitchison adjourned the hearing, subject to further order of the commission, with a statement that early announcement would be made of the schedule of further hearings, substantially in accord with a tentative schedule which had been circulated.

This was the first hearing in one of the two large hearing rooms in the commission's new building. Although it had been understood that especial attention had been paid to accoustics, as the hearing rooms are built in what are almost separate buildings inside the court of the main building, there were many complaints throughout the proceeding as to the difficulty in hearing either witnesses or counsel. Although the street-car noise which was so disturbing in the commission's old building was absent, Commissioner Aitchison repeatedly asked witnesses and counsel to raise their voices and it was found very difficult for those in the audience to keep in touch with the proceedings. The room also was too small for the attendance on the first few days but a large auditorium between the I.C.C. Building and the Labor Department Building will soon be available for large hearings.



Typical Paint Marks Now Produced by the Detectors

The outside spots in this instance were caused by the wheel burns clearly visible, while the center spot was caused by a 35 per cent transverse fissure.

Sperry Detector Car Introduces Pre-Energization

SEVERAL important improvements have been made in the equipment for the detection and recording of transverse fissures in rails by Sperry Rail Service, these including the pre-energization of the rail, a more precise method of marking the rails at points of defect, and further simplification of the record tape. Although of recent development, these improvements have been incorporated in all of the Sperry cars, including three new single-unit rail-motor cars which have been added to the service fleet of the company.

Pre-energization, as it refers to rail flaw detection with the detector cars, consists essentially of the forcing of current through the rails in the desired direction directly in advance of the energization of the rails in connection with the search for flaws. Research in the Sperry laboratory disclosed the fact that each face of a transverse fissure is a natural magnetic pole, produced by the magnetic field of the earth. It also made evident that when a heavy current is passed through the rail, the faces of a transverse fissure acquire a definite polarity due to the electrical energization, which may be similar to or directly opposed to the normal polarity, depending upon the direction of the current. Tests showed that fissures are detected readily when their normal polarity coincides with the polarity of electrical energization produced by the detector equipment, but that if the normal polarity is opposed to that produced by the electrical energization, the normal flux distortion caused by the fissure is either eliminated or greatly reduced, making detection difficult and, in some cases, impossible. By pre-energization, all of the fissure faces are given the correct polarity, doing away with the difficulty of opposed polarity.

Many field tests verified the laboratory results. On a special test track containing known fissures detected in commercial testing, after full energization of the rail with polarity opposite to the direction of testing, the detector car failed to detect approximately 50 per cent of the existing fissures. Benefitting by the pre-energization of the rail in the direction of testing, brought about by the run of the car, a second run then brought in full strength indications on the recording tape of all of the fissures.

To demonstrate the advantages of pre-energization in actual field testing, two Sperry detector cars, coupled together, tested a considerable mileage of track on the Pennsylvania. While both cars tested independently, the first car had the effect of pre-energizing the rail for

One of the New Single-Unit Detector Cars, Showing the Forward Brush Assembly of the Pre-Energizing Circuit Immediately Behind the Forward Truck (in Circle), and the Searching Unit Mounted Between the Wheels of the Rear Truck (Oval)

the second car. As a result, the rear car, benefitting from the pre-energization of the first car, recorded 72 two-pen fissure indications, whereas the front car, without pre-energization, recorded only 57 two-pen fissure indications and 7 one-pen (weaker) indications, and actually missed 8 of the fissures recorded by the rear car.

Details of the New Detector Cars

The new detector cars are Winton gas-electric cars, 57 ft. long, of special design and interior arrangement to meet the requirements of the equipment layout. The driving power of the cars is a 220-hp. engine, direct connected to a General Electric generator, in an arrangement which permits operation of the cars at 40 m.p.h. in either direction from either end. The power plant of the detector equipment is housed in a generator compartment, immediately in front of the recording and instrument room at the rear of the car. Special furnishings provided include a galley, a dining and lounge room, sleeping quarters, and a lavatory with a shower bath.

The essential difference between the new cars and the other single-unit detector cars is in the rear truck arrangement, which is of special design to permit the incorporating of the pre-energizing or third-brush feature to the best advantage. In the new cars, the detector rail-energizing brushes and the searching unit or pick-up device on each side, are located between the wheels of the rear truck, which has a wheel-base of 10 ft. 8 in. and which is made up entirely of welded sections. Aside from the location of this equipment, it differs in no important respects from that suspended mid-way between the front and rear trucks in the other cars.

The pre-energizing feature consists essentially of the provision of auxiliary rail brushes in a separate circuit in advance of the rail-energizing brushes of the detection equipment. On the new cars, the forward brush of the pre-energizing circuit for each rail is located at the rear of the forward truck, by which it is supported, while the rear brush of this circuit is consolidated with the forward brush assembly of the detector circuit, although independent electrically from it. The current forced through the pre-energizing circuit is furnished by a generator, independent of the main generator of the detector equipment.

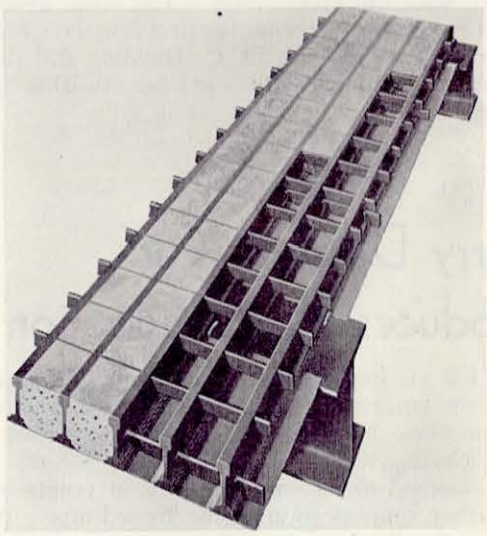
In incorporating the pre-energizing feature in the other single-unit detector cars, the separate circuit for pre-energization consists of forward brushes installed between the wheels of the front trucks, and rear brushes located immediately ahead of the main brushes on the main brush carriage. The former two-car detector units, have been consolidated into three-car units, consisting of a hauling car and two of the earlier detector cars. In this arrangement, the leading detector car, with all of the detecting and recording apparatus removed, is now equipped solely to pre-energize the rails and the space formerly used for recording purposes now serves as a galley.

Another development which is being added to all of the detector cars is a new "short-spot" paint system for marking the rails automatically at the locations of defects. In the new system, the paint marks are always of the same length, approximately two inches, in contrast with much longer marks of varying size produced by previous systems. Furthermore, a new high-speed paint gun produces the marks on the rails directly at the points of defect, regardless of the testing speed at which the car is being operated. In the new system, defects, external or internal, as little as two inches apart, are indicated by separate paint marks.

As a result of the increased sensitiveness of the detector equipment in locating defects, largely as a result of pre-energization, one of the two pens used formerly to establish the tape record of the rail condition, has been eliminated, thereby simplifying the record to a single line. It is said that this new arrangement results in a large reduction in the number of indications due to superficial causes, such as wheel burns and dirt, and, at the same time, facilitates a true interpretation of the record by the operator.

New Floor Slab Introduced by Carnegie

A NEW type of floor construction, known as I-Beam-Lok armored slab, designed for use in ballasted deck bridges, as well as for heavy duty floors, is now being offered by the Carnegie Steel Company, Pittsburgh, Pa. This floor is similar to the T-Tri-Lok floor fabricated by the same company. It varies from the earlier design in that small special I-beams replace the T-bars as the main members of a steel



The I-Beam-Lok Armored Floor Slab of the Carnegie Steel Company

grid that provides the reinforcement and an armored top surface for the concrete filling that is introduced in the field and also provides the form work that supports the concrete until it has set.

In addition to the I-beams, the design includes cross-bars that provide the reinforcement for the lateral distribution of the load and tie the I-beams together to form a pre-assembled frame that is readily handled in the field. These cross-bars are inserted through slots in the webs of the I-beams, being tack-welded at the intersections. No metal is cut from the I-beam flanges.

Form work for the concrete is provided by metal form strips supported on the lower flanges of the I-beams. These strips are omitted over the top flanges of supporting beams and girders, thereby permitting the concrete to come directly in contact with the bearing areas, and facilitating the welding of the I-beams to the stringer flanges.

The I-beams for this floor may be 3 in. or 3½ in. in depth. The cross-bars are spaced 4 in. apart at the top of the slab while at the bottom the spacing is much greater. The slab weighs 47 lb. per sq. ft. in the 3-in. depth and 53.5 lb. per sq. ft. in the 3½-in. depth.

Safety Section Meets in Cleveland

Further reductions in accidents dependent upon formulation of adequate rules and their enforcement by managements

THAT further large reductions in accidents can be brought about on the railroads by the formulation and enforcement of rules and the training of employees as to proper conduct during the performance of their duties was the general theme at the fourteenth annual meeting of the Safety section of the American Railway Association held at Cleveland, Ohio, on October 2-4, with an attendance of 436 representatives of railroads. This contention is of significance in view of the upward trend in casualties to employees on duty during the first five months of 1934 and should be an important factor in attaining the new goal calling for a five per cent reduction per year in railway employees' injuries during the next six years, 1934 to 1939, inclusive.

C. L. LaFountaine, chairman of the section and general safety supervisor of the Great Northern, in his opening address said:

"While I do not deem this increase as particularly alarming under the circumstances, it has provided a warning as to what may be expected with any material additional increase in business, unless effective preventive measures can be adopted by the respective railroads to overcome it. The injuries which have brought about this upward trend in our casualty ratio are principally non-train accidents. This is due to the unusually large increase in the man-hours worked in this branch of the service during the first half of this year, rather than to any inactivity on the part of the railroads in accident prevention work. It has been brought about by an increase in business and a desire upon the part of railroad managements to co-operate fully with the general demand to aid in relieving the national unemployment problem. The railroads were asked to carry on an extensive program of track and equipment maintenance, to purchase rails, cars and engines or rebuild if the circumstances require. This made necessary a sudden and large increase in the forces doing this kind of work, resulting in either the employment of new men or the return to service of men who had been inactive in railroad service for some time."

The work that was required of these men, in most cases, was of a more hazardous nature. For instance, in the maintenance of way department the increased man-hours were consumed largely in the relaying of rails, bank-widening and ballasting tracks—heavier work and more dangerous work than that of ordinary track maintenance, which has been carried on more generally for the past two or three years. This is true also in the maintenance of equipment department, stripping and rebuilding and steel-underframing cars and heavy locomotive repair work, with large gangs of men, newly organized. This affords opportunity for accidents not to be found in the ordinary light repair work performed by regularly organized crews. We had a right to look forward to a momentary increase in the casualty ratio, but this condition has since adjusted itself and we will be able to bring back our accident ratio to a lower level than it was for 1933.

New Goal

In 1923, we set a goal calling for a reduction, based on the 1923 record, of 35 per cent in casualties to employees on duty by the end of 1930. The railroads actually brought about a reduction in the casualty ratio of almost double that asked for. Consequently those who had to do with the making of the goal set in 1931, calling for a 33 per cent reduction in employees' injuries by the end of 1933, felt it highly desirable that they set the goal high enough to tax the maximum efforts of all railroads, in order to accomplish it. While there were approximately 40 railroads which accomplished this goal, the Class I railroads, as a whole, made a reduction of 26 per cent in their casualty ratio. Numerically speaking, there were 898 employee fatalities in 1930, as compared to 473 in 1933, a decrease of 425, equalling 47 per cent. Injured in 1930 were 33,181 and in 1933, 14,482, a decrease of 18,699, representing a decrease of 56 per cent. While we did not accomplish our goal, we should be encouraged by the fact that the railroads were able to bring about a reduction in the casualty ratio to employees on duty per million man-hours worked of 26 per cent in a three-year period, which followed a reduction of 70 per cent in the casualty ratio during the previous seven years.

The Committee of Direction gives you a new mark at which to aim. It is a new goal, calling for a 5 per cent reduction per year in railway employees' injuries during the next six years, 1934 to 1939, inclusive. We feel that this goal will be far exceeded by the railroads now having the higher accident ratios, that it is possible of attainment and will be accomplished by the railroads having lower accident ratios.

Officers elected for the ensuing year are: Chairman, Thomas H. Carrow, superintendent of safety of the Pennsylvania; first vice-chairman, C. T. Bailey, claims attorney of the Central of New Jersey; and second vice-chairman, C. F. Larson, superintendent of safety of the Missouri Pacific. This is the first time in the history of the section that a chairman has been elected the second time, Mr. Carrow having been chairman in 1926-1927 and Mr. Bailey in 1931-1932.

The agreement covering the affiliation of the Safety section of the American Railway Association with the Steam Railroad section of the National Safety Council, which expired on February 26, has been extended for a period of two years. The extension is contingent upon compliance by both parties with a working agreement entered into on February 20, 1934.

Savings from Safety Large

T. H. Carrow, chairman of the Committee on Statistics, in his discussion of the employee accident record of the railroads, said:

A preponderant majority of accidents to employees, notwithstanding the phenomenal reductions that have been made and the present low accident frequency rate, are still attributable to man failure and can be lessened by more effective supervision, training and discipline to insure compliance with rules and safe practices, a comprehensive set of safety rules being essential to this end.

The employee accident record of any railroad or any unit of a railroad is, therefore, determined by: 1. The character of the rules in effect; 2. The extent to which the rules and safe practices are known and enforced by the local officers and supervisory forces, and 3. By the requirements of the management with respect to these two items.

Using the 1923 casualty rate as a basis for calculations, there were 66,000 fewer accidents to employees in 1934 than there would have been if the rate for the former year had obtained, and a corresponding reduction in previous years. It cannot be estimated what this means to the employees and their families in the conservation of income and the prevention of suffering. But it obviously represents a great boon to them. The disbursements of the insurance department of one standard labor organization were $750,000 less in 1931 than they would have been on the basis of the 1923 accidental death and disablement rates.

It is difficult to estimate what the aggregate savings from safety have been to the railroads, either in dollars and cents or in good-will. One thing is very certain and that is that the "hazard of employment" has been greatly diminished. The

direct and indirect savings to the railroads have been very substantial.

The bulk of all injuries being sustained by railroad employees today, as in former times, result from causes over which the officers, supervisory forces and employees individually or collectively, do have control. Therefore, safety efficiency can be increased 30 per cent.

To bring this about, the essential elements of an effective safety program should include:

1. A comprehensive set of safety rules outlining the safe ways of working.
2. A practical, working understanding of the rules or safe practices by all local officers, supervisors and employees, to be assured by suitable examinations.
3. Invariable obedience to all rules, violations not resulting in accidents representing the same degree of culpability as when accidents do result from such violations.
4. Definite and not perfunctory observations by local officers and supervisors to detect violations of safety rules and formal report of violations detected as a requirement of management.
5. Formal disciplinary action on proven violations, with entry on the discipline record covering every case.
6. A monthly and cumulative report of the violations of rules or unsafe practices detected by each local officer and supervisor, and a monthly summary by departments for divisions and systems.
7. All accidents, regardless of how trivial, should be reported and investigated promptly to determine cause, responsibility and disciplinary action to be taken where responsibility is shown.
8. Investigation should invariably develop an answer to these two questions: Was accident due to the violation of a rule? If not, should a rule be provided?

Train Accidents

Specific consideration of employee accidents according to classes dealt first with train accidents. The outstanding features revealed by the 1933 statistics on train accidents, according to the report of the Committee on Train Accidents as given by G. H. Warfel, chairman, and assistant to executive vice-president of the Union Pacific, are:

1. A slight increase in frequency of occurrence, particularly derailments.
2. Several accidents with an unusually large number of persons hurt, notably rear end collisions.
3. A greater number of casualties than in any year since 1930, resulting in a casualty rate per million train-miles 5 per cent above 1930, instead of the 33 per cent reduction hoped for.
4. Train accidents accounted for 22 of the 48 passengers and travelers killed and 65 of the 488 employees killed in accidents of all classes.

The year's total of 5,623 train accidents of all kinds occurring on the road and in the switching yards is the smallest number ever recorded in any year. It included 1,219 collisions, 3,291 derailments, 478 locomotive breakdowns and 635 miscellaneous accidents. There were 153 persons killed and 1,252 injured, exclusive of trespassers, both figures being higher than in the preceding year.

When these accidents are classified by causes, there are:

1,713 due to negligence of employees.
2,324 due to defects in or failures of equipment.
656 due to defects in or improper maintenance of way and structures.
930 due to miscellaneous causes.

The forms of negligence most disastrous from the standpoint of human casualties in 1933, according to their frequency were:

1—Disregard of fixed signals; 2—Excessive speed in violation of restrictions; 3—Failure properly to protect by flagmen; 4—Overrunning meeting points with other trains; and 5—Switches set in wrong position.

While the frequency rate of train accidents showed a small increase in 1933, as compared with the remarkably low figure of the preceding year, the rate of 7.22 accidents per million train-miles run remains much lower than for any year prior to 1932, and represents a reduction of 63 per cent under the base year of 1922. The frequency rates of collisions and derailments are slightly higher than in 1932, while locomotive and miscellaneous accidents attained a new low frequency of 1.43 per million train-miles.

The report of this committee was amplified by addresses on Preventing Collisions and Derailments Due to Negligence of Employees, by C. H. Longman, assistant to the general manager of the Chicago & North Western; Preventing Failures of Car Journals, Wheels, Trucks and Couplers, by W. B. Moir, chief car inspector of the Central region of the Pennsylvania; and Preventing Derailments Due to Defects in Track, Bridges and Roadway, by A. H. Peterson, roadmaster of the Chicago, Milwaukee, St. Paul & Pacific. Mr. Longman recommended as a means of preventing collisions and derailments, periodical examinations to make certain that employees are familiar with rules, and surprise tests to determine whether they are following rules and orders. On the 14 divisions of the North Western, he said, a minimum of 846 surprise tests are conducted by officers each month.

Mr. Moir gave several suggestions for preventing failures of car journals, wheels, trucks and couplers. To prevent "waste grab" which contributes to the large number of hot journals, he recommended that car oilers in transportation yards be provided with waste grab hooks which, when placed along the lower edge of the bearing, will detect waste grabs. He also cautioned against throwing cold water on hot journals. To detect defects in multiple wear wheels under passenger cars, he suggested that the back of the wheel plates and rim be covered with whitewash, which brings to view cracks which cannot be detected with the naked eye. He also described freight car inspection pits and their effectiveness in detecting defects.

Mr. Peterson discussed the more unusual causes of train accidents—those not due to defective track in the ordinary sense but ascribable to the less common mechanical causes, such as storms, washouts and men at work. He dealt specifically with sun kinks, heaving track, wind storms, fire, precipitation, water pockets and flagging while men are working.

Grade Crossing Accidents

The Committee on the Prevention of Highway Crossing Accidents, of which H. A. Rowe, manager of the claims department of the Delaware, Lackawanna & Western, is chairman, again reported a slight reduction in the number of accidents and fatalities in 1933 and a substantial reduction in the number of injuries for the fifth consecutive year of recessions from the peak recorded in 1928. Automobile registration in 1933 was 23,827,290 cars, an increase of 1.4 per cent over the preceding year. It is quite comparable with the number of automobiles registered in the peak year of crossing accident casualties. Gasoline consumption, which is a fair barometer of automobile use, was 16,025,562,000 gal. during 1933, which is an increase of about 2 per cent over the preceding year. The increasing use of smaller cars with greater mileage per gallon of gasoline, indicates that the traffic over and across railroad tracks was fully equal to 1932 and possibly exceeded that year's traffic.

Due to greater care on the part of the automobile driver and the activities of the railroads, only one person was killed at railroad highway crossings for each 15,769 automobiles registered in 1933 and only one person was injured for each 6,443 automobiles. In contrast to this, the record of motor vehicle accidents upon streets and highways in 1933 shows 1 killed for each 821 automobiles and 1 injured for each 200 cars. Illustrative of the thoughtlessness of some motor car drivers is the fact that in 1933 motor vehicles colliding

with the sides of trains accounted for 28 per cent of all crossing accidents, 17 per cent of the fatalities and 40 per cent of the injuries.

To further reduce grade crossing accidents, the committee recommended that the individual railroads stress the necessity of giving adequate and timely warning to the public of the approach of trains to highway crossings. The warning from the locomotive should be continued until the crossing is reached.

Train Accidents as Reviewed by I. C. C.

One of the most enlightening discussions of train accidents was a summary of the conditions and practices involved in certain accidents investigated by the Bureau of Safety of the Interstate Commerce Commission, given by William J. Patterson, director of this bureau. His address in part follows:

Last fall the commission investigated a rear-end collision on an eastern railroad in which 14 persons were killed and 32 injured. The accident occurred on a double-track line, equipped with automatic block signals and an automatic train-stop device. These devices were installed at considerable expense and were intended to prevent just such an accident. However, it occurred in spite of these protective devices, because of failure, error or neglect on the part of officers and several employees involved. The engineman of the following train received a calling-on signal indication at the entrance to the block in which the accident occurred. This signal authorized him to proceed at "restricted speed," which was defined in the book of rules as follows: "Proceed prepared to stop short of train, obstruction or anything that may require the speed of a train to be reduced."

The engineman operated the forestalling lever of the automatic train-stop device and entered the block at a low rate of speed. At that time he knew the block was occupied by another train, having been following it when it entered the block, but he assumed that it would keep moving and consequently allowed the speed of his own train to increase, with the expectation of proceeding as far as the next automatic signal. However, the preceding train, which was out of sight around a curve, stopped short of that automatic signal on account of switching operations ahead.

The engineman of the second train was looking across the curve in order to pick up the indication of the automatic signal and failed to see the rear of the standing train or its flagman until too late to avert the accident, although he had a view of the rear of the standing train for a distance of about 900 ft. The rule under which this train was proceeding was simple and easily understood, yet the speed of the train was increased instead of reduced. It was evident that the employees did not have a clear and correct understanding of what was meant by the term "restricted speed," and that proper effort was not made to either observe or enforce the requirements of the rule.

Faulty Inspection of Bridges Serious

Shortly before the accident to which I have just referred, there were two other accidents which were of an unusually serious nature. One occurred in the southwestern section of the country and was caused by a flood resulting from a cloudburst having washed away the fill supporting one of the abutments of a bridge, permitting it to collapse under a train, while the other occurred on an eastern railroad and also involved flood waters, the center pier of a bridge having been undermined. In the first of these two cases not only did it appear that the washing away of the fill could have been guarded against by rip rap or other protective measures, but the need for such protection had existed for two years, or since the construction of a highway bridge about 150 ft. upstream from the railroad bridge.

In addition, rains earlier in the month had resulted in the bank of the stream, and also the toe of the slope of the fill supporting the abutment, being washed sufficiently to direct attention to the need for protection. Local residents using the highway had observed the condition and recognized the possibility of danger to the railroad bridge but no representatives of the railroad had made sufficient inspection to discover the condition, although a roadmaster had passed over the territory less than 24 hr. prior to the accident, primarily on a switch inspection trip, but also stopping to look at some of the small pile bridges on account of rains which had fallen two days previously. One of the functions which must necessarily accompany the safe operation of a railroad has to do with the taking of protective measures before actual danger develops. Here the need had existed unrecognized by the railroad company for a period of two years and clear evidence of danger was presented a few days before the accident occurred. Failure to recognize and guard against this danger resulted in a toll of 11 killed and 46 injured.

In the second case involving flood waters, the undermining of the center pier of the bridge permitted it to settle under a passenger train, resulting in the derailment of the entire train, consisting of an engine and 10 cars, and in the death of 2 persons and the injury of 20 persons. The piers of the bridge had been built on a gravel foundation, no provision being made to guard against scouring because it was stated that the gravel was too compact to permit the driving of piles. American Railway Engineering Association rules covering inspection of bridges provide in part that the inspection of foundations should include an examination for indications of scouring or undermining, and that when necessary, soundings should be taken for this purpose.

The evidence in this case indicated that the company had made no underwater inspection nor taken any soundings for the purpose of detecting possible scour at any time subsequent to the erection of the bridge 29 years previously, although soundings made by United States engineers five years previously indicated that there had been some scouring or at least a considerable lowering of the bed of the stream on one side of the center pier. Flood conditions which existed on the night of the accident no doubt completed the undermining of the center pier sufficiently to cause its collapse under the train, but there had been other heavy rains in the territory drained by the river in question which might have resulted in some scouring of the bed of the stream. Had soundings been taken immediately following such flood conditions, the need for protective measures might have developed, resulting in action which would have prevented this accident.

Speed a Cause of Derailments

Speed has been a factor in a number of the accidents which were investigated during the year ended June 30, 1934, and I shall refer briefly to two of them. One of these cases involved the derailment of a passenger train due to excessive speed on a sharp curve, the evidence indicating that the engine turned over from centrifugal force, without marking the ties between the rails, while traveling at a speed estimated to have been from 50 to 65 miles per hour, although the speed of passenger trains on the curve where the accident occurred was restricted by slow board to 30 miles per hour. This accident resulted in the death of three persons and the injury of nine persons, the engineman being among those killed. The fireman said that when about 25 miles from the point of accident he told the engineman the train was going too fast and upon reaching a point about two miles from the point of accident, the engineman crossed over to the fireman's side of the cab with his watch in his hand and said they had covered 34 miles in 29 min. According to the fireman, the engineman then returned to the right side of the cab and moved the throttle only one notch toward closed position and did not apply the brake until just before the accident occurred.

The other accident in which speed was a factor involved failure properly to control speed in an occupied block; this is a frequent cause of accidents. This accident occurred on a single-track line, trains being operated under a manual block-signal system. The first train had 113 cars, with a helper behind the caboose, while the second train had 127 cars with two engines on the head end and a helper behind the caboose. After passing the last block office, the first train had been stopped and shortly afterwards was struck by the following train. More or less fog had prevailed, and it was very foggy in the vicinity of the point of accident. Investigation developed that the second train passed the last block office 41 min. behind the first train, made no stop enroute and had proceeded at an average speed of about 23 miles per hour, whereas the maximum permissible speed for freight trains with helper engines was only 25 miles per hour and under the rules a following train in an occupied block was required to be operated under such control that it could be stopped short of a train or obstruction.

Improper Handling of Train Orders

Improper handling of train orders continues to be a prominent factor in the occurrence of train accidents. Several months ago the commission investigated a head-end collision which afforded an excellent example of how accidents occur under the train-order method of operation. This particular accident involved two freight trains and resulted, fortunately, in the injury of only two persons. Each crew was in possession of an order directing a regular train to wait for an opposing extra until a certain specified time. As the regular train approached the waiting point, the headlight on its engine went out and the train approached the station slowly and was moving between the switches of the siding when struck by the extra, which had

passed the switch where it should have taken siding. The extra consisted only of an engine and caboose. When the conductor read the wait order, the engineman gave his acknowledgment without having heard all that the conductor said and then turned the order over to his fireman, who misread it, following which the engineman read the order himself and made the same mistake as the fireman.

In addition to these errors, the conductor and engineman of the extra failed to have any understanding as to where they were going for the superior train, although such an understanding was required by the rules; neither was the train stopped when approaching the meeting point; although the rules specify that when a meeting point whistle signal is not sounded, the train must be stopped at once. In this case, when the accident occurred, a trainmaster was in the caboose instructing the flagman as to his duties, yet neither apparently was greatly concerned about the safety of the train upon which they were employed.

The brief references I have made to accidents investigated by the Bureau of Safety during the past year do not represent unusual conditions. Accidents of this kind are encountered in our work year after year and are detailed in our accident investigation reports made public from time to time. These reports are widely distributed and are available upon request. Many railroads are availing themselves of the information contained in these reports to aid in discovering and correcting dangerous or undesirable conditions and practices on their lines before they result in accidents.

Safety Officer Should Be at Accident

Certain railroad officers devote their entire time to safety work, yet they are seldom found at the scene of a train accident or in the investigation room. A train accident is a serious matter. It may and frequently does result in a considerable number of deaths and injuries and large property loss. Surely the fundamental idea of safety-first applies to train operation and the methods and practices followed in connection therewith, yet the duties and responsibilities of safety officers do not appear to include operating conditions and practices which vitally affect the safe handling of trains and the maintenance of the track and equipment involved.

The facts which were developed in each of these cases clearly indicated that on the railroads involved there was an opportunity for the expansion of the safety idea as it related to the safe handling of trains. As contrasted with the situation wherein so many railroads do not have recognized safety officers participate in the investigation of serious train accidents, it has been noticeable in our accident investigation work that when a serious accident occurs on a certain one of our large systems, a safety officer participates in the investigation. That particular system has had unusual success in its safety efforts.

In connection with the non-observance of rules which was involved in some of the accidents I have mentioned, there is one matter which I desire particularly to call to your attention. Frequently an investigation indicates that employees have been doing or have been failing to do certain things, in violation of the rules, until it develops into an established practice and this practice finally results in an accident. Under these circumstances, the employee usually is held at fault. Rules and instructions governing the operation of trains are based on years of experience and are the result of the careful deliberations of the best minds among experienced railroad operating officers. Yet there are occasions when these important rules are not enforced, violations occasionally being overlooked as a matter of expediency. An operating officer assumes a grave responsibility if in his desire to expedite the movement of traffic he permits violations of the rules to go uncorrected. Examples of the tendency to expedite matters at the expense of rule violation can be found in connection with flagging.

The rules of various railroads differ but all of them have the same ultimate object in view, namely to insure that signals are displayed behind a train to provide adequate protection. In many instances, however, it is common knowledge that in order to avoid delay, the flagman is not expected or required to comply with the rules. On some roads the flagman starts back promptly and continues for a proper distance or until recalled but on others he loiters around the rear end or is not expected to go back any great distance. When those things are observed frequently, the natural inference is that the employees are reflecting the attitude of those charged with enforcement of rules on the particular railroad involved.

Another example of rules being frequently overlooked has to do with speed, which was an important factor in two of the accidents referred to previously. I venture to say that violations of speed restrictions, or rules governing speed, are among the most common rule violations on the railroads of this country at this time. Each year the Bureau of Safety investigates several accidents wherein excessive speed or the failure properly to control speed was the main or a contributing cause; out of 87 accidents investigated by the bureau during the fiscal year ended June 30, 1934, excessive speed was involved directly or indirectly in at least 17 cases.

Rules are placed in the rule book for a purpose. If they are not to be enforced at all times and under all conditions, the obvious remedy is for the proper authority to modify or annul them, according to the purpose sought to be accomplished. Violations of rules should not be ignored or disregarded by supervisory officers, nor should it be left to the employee himself to find out by experience which rules are in full effect and which rules are not intended to be observed. A rule which is not enforced does not belong in the book. Failure of enforcement of one rule is apt to create in the mind of the employee a lack of respect for other rules which cannot be entirely dispelled by the most energetic safety officer.

To avoid accidents, there are two essential principles to be kept in mind. First, rigid enforcement of and obedience to rules so that as a result of instruction, training and practice the employee will, in case of emergency, instinctively do the right thing; and secondly, thorough investigation of all accidents for the purpose of ascertaining not only the immediate causes but also the underlying factors leading up to the immediate causes, and then applying the proper remedies or preventive measures.

Train Service Accidents

Train service accidents were reviewed by the Committee on Train Service Accidents, of which D. G. Phillips, superintendent of safety of the Wabash, was chairman, and further analyzed by E. A. Meyer, manager of the safety and fuel departments of the Chicago, Milwaukee, St. Paul & Pacific, who spoke on "Getting On or Off Cars and Engines and Operating Hand Brakes;" by D. A. Klumph, supervisor of safety of the Pere Marquette, who spoke on "Coupling and Uncoupling Cars and Engines and Air and Steam Hose;" and by Mr. Phillips, who also spoke on "Struck and Run Over—Not at Public Crossings."

It was disclosed that the causes for accidents of this class and the remedies to prevent these accidents are the same as they have been for several years and that, therefore, the problem is one of discovering how to get the remedy applied. Proper supervision, which includes that supervision which secures the co-operation of the men, was cited as a factor that will produce the desired results.

Mr. Meyer cited some of the many reasons for injuries suffered as a result of employees failing to get on or off cars and locomotives in the proper manner. He also discussed hand brake operation, calling attention to practices which will prevent accidents. Mr. Klumph told of the dangers of short cut methods often employed in coupling and uncoupling cars and locomotives and described some accidents which caused injuries and burns when employees failed to take the necessary precautions in handling live, air and steam hose. Mr. Phillips discussed casualties occurring in yards and on other parts of the railroad when employees, as they stand on or cross tracks, fail to heed approaching cars or locomotives.

Non-Train Accidents

Non-train accidents were considered in the report of the Committee on Non-Train Accidents, of which C. F. Larson, superintendent of safety of the Missouri Pacific, was chairman, and in addresses made by Albert A. Miller, engineer maintenance of way of the Missouri Pacific; G. B. Farlow, division engineer of the Baltimore & Ohio; J. C. Miller, shop superintendent of the New York, Chicago & St. Louis; L. M. Granger, tool room foreman of the Erie; and J. Romanoff, supervisor of freight operation of the Erie. The committee offered the following "Ten Point Program for Safety Work"

as a part of the daily thought and activity of every supervisor and safety leader:

1. Set a safe example and otherwise show by word and deed an interest and belief in accident prevention and a will to get results in this feature of the work.
2. Act promptly on every correctible and removable unsafe condition observed by or reported to you.
3. Let no unsafe act or practice go unchallenged, but seize the opportunity to prevent the inevitable result.
4. Make it a part of the daily game to find and counsel or correct the uninformed, thoughtless, indifferent, careless or reckless ones—outlining safe methods of work and giving specific warnings of hazards and methods of meeting them to both old and new men.
5. Search out the cause or causes and responsibility for every personal injury and after finding the defect in man, method, material or condition—use the information towards preventing another similar accident.
6. Plan and oversee every unusual job and the more hazardous kinds of regular work.
7. Foster the widest possible spread of interest in accident prevention.
8. Keep the Safety Bureau informed of safety ideas and measures adopted by you which might be extended over a larger territory.
9. Raise the standard of physical and mental well-being whereever practicable as one of the greatest factors in safety efficiency.
10. Check up constantly your own safety work and that of your associates.

Uniformity in Reporting Accidents

One of the features of the meeting which will do much to bring about uniform practices in accident reporting was an executive session for railroad operating and accident-reporting officers and safety officers and assistants. At this session the report of the Committee on Uniform Practices in Accident Reporting and the interpretations of rules made by the Interstate Commerce Commission were discussed and the methods employed by some railroads analyzed and criticized. As a result of this session, a clearer understanding of accident reporting was developed which should be reflected in the records of the railroads during 1934.

Electrical Men Meet in Chicago

A. R. E. E. holds busy two-day meeting—Supply manufacturers exhibit for first time in four years

A JOINT meeting of the Association of Railway Electrical Engineers and the Railway Electrical Supply Manufacturers Association was held in the Hotel Sherman, October 4 and 5. The last annual A. R. E. E. meeting was held two years ago and four years have elapsed since the R. E. S. M. A. has held an exhibit. No exhibit hall was used, the various manufacturers displaying their products in rooms on the second and third floors of the hotel.

The railroad association offered inducements to its members to study exhibits thoroughly, but the interest of the members in new products created by the rapid expansion of this field and the long period since the last exhibit, made these inducements a matter of secondary interest.

A total of nine committee reports were presented. A summary of the reports and of the discussion follows:

Car Electrical Equipment

The report of the committee on car electrical equipment was the most comprehensive and detailed one presented. It deals particularly with air conditioning and describes the ice-activated, the mechanical-compression and the steam-ejector systems of air conditioning for passenger cars. This is supplemented by a discussion on air circulating systems and a description of all of the important types of air conditioning equipment now being offered by the various manufacturers. A complete bibliography is included which lists and classifies equipment as now used by the railroad. Performance of equipment in service is described. This compilation shows that the number of cars in service on September 12 was 2,321.

Three-phase 220-volt a.c. power is recommended for pre-cooling and a specific type of plug and receptacle is suggested for application at all points where pre-cooling is done. A method of rating storage batteries used in air conditioning service is outlined. The committee also intends to study the desirability of using 110-volt systems.

Discussion—The report recommends 220-volt three-phase a.c. power for the operation of the a.c. motors used for pre-cooling. Many power systems are now designed to supply 208 rather than 220 volts. This raised the question as to whether or not 208 volts would be sufficient for satisfactory operation of these motors. The opinion was expressed that 220 volts could in all cases be provided for, and that it would be better to use a booster transformer than to use extra size cable for avoiding voltage drop.

The adoption of a direct-current voltage for air-conditioned car operation was considered of relatively great importance, the question being whether 32, 64 or 110-volt systems should be used. The objection raised to making any change from the present 32-volt standard was largely overcome by evidence brought to show that cars could be satisfactorily operated as self-contained units. One speaker stated that train lining is designed for those who do not wish to properly maintain their equipment. Two railroads have long made a practice of operating cars without electric train lines and it was felt that it will be satisfactory to operate cars in a train, even though they may employ different voltage electrical systems.

One speaker offered as the best solution for charging the large air-conditioning batteries, the use of a portable motor-generator set which takes its power from the 220-volt, three-phase source used for standby motors.

It was suggested that a head-end source of power may eventually be used to supply heat as well as light and power, and that this possibility should be reckoned with in an attempt to determine the systems which will best suit future requirements. A need was expressed for better heat insulation of cars for the prevention of power wastes in unnecessary pre-cooling.

A desire was expressed for larger battery boxes, but

it was felt that since the size of a battery box is dependent upon the voltage used, no change should be made until the voltage question is settled.

Illumination

The subject of illumination as presented by the A. R. E. E. committee deals specifically with developments with incandescent lamps and revisions of the standard incandescent lamp schedules. One new type of lamp described is equipped with two filaments with different wattage rating, either or both of which may be energized to produce three levels of illumination. Another new lamp is the Mazda Lumaline lamp which is a tubular type with contacts at each end. It can be used to produce a practically continuous line of light and has been adapted for car lighting service.

Investigation shows that pre-focused headlight lamps have been adopted for passenger locomotives for one large railroad and during the year 1933, a saving of several thousand lamps was effected and detentions due to headlight lamp filaments, enroute, were radically reduced.

Discussion—Gaseous light sources were discussed. These units have exceptionally high efficiencies, but it was shown that if a color of light comparable to Mazda lamps or daylight is desired, the efficiency of the gaseous lamp is no better than that of the incandescent. It was stated that the high pressure mercury or sodium vapor lamps may be found suitable for outdoor and for high-bay shop lighting.

Since the report was presented, a 12-in. 40-watt Lumiline lamp has been produced. This lamp is tubular in form, fitted with flat iron ends, so that units can be used end to end to form a practically continuous light source of any desired length. These are now being tried out for car-lighting purposes.

Series lighting and pre-focused lamps as applied to floodlighting were discussed in detail. It is felt that there will be many changes in the art and science of coach lighting. A need was expressed for co-ordinating the needs of efficient lighting with those of car interior design.

Locomotive Electrical Equipment

The report of the committee on locomotive electrical equipment describes a unit cab lamp, by means of which one lamp can be used to supply light for all of the various gages and other accessories which require lighting in a locomotive cab.

An investigation of fusing practices shows a wide difference among railroads. The committee recommends that headlight, train-control, cab-signal and train-stop circuits be not fused; fusing of other equipment to be optional.

A three-point suspension for head-light mounting is described. This mount is offered to provide a simple effective method of alining head-lights.

Concerning pre-focus lamps, the committee recommends that any action which would result in adoption be postponed.

A foam meter is described in detail and the committee expects later to furnish information on a low water indicator.

The subject of specifications for insulated copper wire has been reopened to include new developments in insulated material designed for steam locomotives.

Discussion—Several years ago, single-light sources were tried for lighting of gages in a locomotive cab, but the light was not controlled and directed adequately, as in the case of the unit described in the report. The unit described was considered satisfactory for the lighting of all apparatus with the exception of a hydrostatic lubricator. Experiments are being made to use a reflector for this purpose. It was explained that this unit does not provide the requirements of the enginemen's order light. Either a 100-watt or a 60-watt lamp was said to be sufficient for use in the special unit.

An appeal was made that the advantages of the pre-focus headlight lamp should not be lost sight of. One reason given for this request was that lamp failures are caused by injury to the lamp base when an attempt is made to get the headlight lamp tight in the socket.

The operation of the foam meter was described in detail, and a chart produced to show how with different waters the amount of blowing must vary from four to 37 per cent to maintain a concentration of 100 grains in the boiler water.

Power Plants

Diesel engines and steam power plant auxiliaries this year occupied the attention of the committee on power plants. That part of the report concerned with Diesel engines deals specifically with fuel. The conclusion is drawn, that it is impracticable to purchase Diesel fuels under any specifications that have not been proven in actual practice, the engine users safest course being to depend upon actual performance of the engine to determine what fuel best suits his particular operating conditions.

The steam power plant auxiliaries dealt with include feed pumps, feed water heaters and air pre-heaters. Formulae are included for determining savings effected by feed water heaters and steam required for heating feed water.

Discussion—The question was asked if Diesel engines require higher grade operating men than those used in steam power plants. This was answered in the affirmative. Another question brought out the fact that in cold climates Diesel engines are operated in heated rooms.

Motors and Control

The subject of motors and control as presented by the committee deals with control for welding generators, shop cranes, pumping stations and turntables. It also includes a consideration of lubrication for electric motors and the use of thermal relays and fuses for motor protection. Thermal-relay protection is recommended for welding generators and it is suggested that a thermostat be mounted on the side of pump packing glands to shut down the motor in case the pump fails to pick up water on starting. The report states that turntable motor controls should be of the reversing drum type with a single handle and should be located at the side of the cab so that the operator facing toward the rails operates the controller with his left hand and the brake lever with his right. The direction of the motion of the table must always be the same as the direction of rotation of the controller.

Discussion—It was shown how power supply lines for turntables could be so designed that an enginehouse fire could not cause them to be cut off. Overhead current collectors were stated to be superior to those run underground to the center of the table, since the latter may be damaged by ice in cold weather.

Thermal relays, it was stated, provide ideal protection when a motor is running, but are not all that could be wished for as protection during starting, particularly in cold weather. It was felt that these relays could be improved, particularly in so far as single-phase operation is concerned.

One speaker described the use of heating units in iso-

lated pumping stations. These units prevent freezing when the pump is not operating and are cut off by a thermostat when the motor is running.

The committee intends to study a method for determining what tractive force is used by each motor when two motors are used to operate a turntable.

Application of Radio to Railway Service

Three types of communication for use between the locomotive and caboose and wayside stations are described in the report of the committee on application of radio to railway service. One of these consists of the use of ultra-short wave radio, another is carrier-current system employing rails and wayside wires and the third is a carrier-current system using rails and ground. Experiments are being conducted on several railroads with these forms of communication.

Discussion—A short wave broadcast made from the Burlington "Zephyr" during its Eastern exhibition was described. Concerning communication between the head and rear end of long freight trains, it was stated that such communication must work on trains up to 200 cars. It was said that the railroads need such communication and that they will buy it when it has been properly developed.

Manual

Due to existing conditions, no revision has been made in the Manual since 1931, the changes then made covering the action of the Association at the 1930 convention.

Discussion—It was decided that no further additions be made to the Manual this year since it is expected that many changes in practice will be consummated within the next few years.

Electric Welding Equipment

Automatic electric welding equipment, atomic hydrogen welding and welding electrodes are featured in the report on electrical welding equipment. Further study of electric welding for building up worn hub plates on locomotive driving boxes is recommended. Atomic hydrogen welding, the report states, is not generally used by railroads, but possess advantages not enjoyed by other welding methods. It is also stated that new welding electrodes, which provide for high speed welding, produce welds which are superior to those made with bare or processed wire, joints welded with this material often possessing a tensile strength of 75,000 lb. per square inch.

The committee is of the opinion that the art of fusion welding would be advanced by a more rigid inspection of finished welds.

Discussion—The prophecy was made that developments in the field of fusion welding during the past 12 or 14 months would make as much difference in the application of welding as were made by the introduction of the process itself. It was said that aluminum is now being welded successfully with the electric arc, and that aluminum cars and aluminum castings can be maintained by the electric arc in cases where the gas process cannot be used.

A recent inspection of one railroad shop showed many electrode holders to be in improper condition, and it was stated that all electrical equipment used for welding purposes should be inspected regularly by electrical men who understand the requirements of apparatus and circuits.

One speaker offered the opinion that welding equipment brings in the greatest return of any equipment used in a shop. He also said that, while the high speeds now possible require large capacity machines, the old machines are still in demand for light work.

Purchase of Electrical Energy

The committee report on purchase of electrical energy recommends periodic checks of power installations to insure that rapidly changing conditions have not so changed load requirement that a saving could be effected by obtaining service under another rate. It is felt that long contracts should be avoided; although they may look promising at the time they are made, changes may take place which might entail a substantial loss instead of the saving contemplated when contract was originally made. The report also states that the problem of reducing demand charges should receive serious consideration on installations where the connected load is large and the consumption small.

Discussion—It was the concensus that much difficulty in obtaining satisfactory power rates has been engendered by the practice of allowing a large number of different men to make the power contracts. This could be avoided by having all contracts reviewed by a competent adviser, and it was suggested that all electrical power contracts should be routed through the office of the electrical engineer, and that this engineer should also receive copies of all major power bills. By this means, he can determine whether or not the contract was functioning as originally intended.

Load limiting devices were discussed and two applications described, by means of which peak penalties were successfully avoided.

Principal interest in the discussion centered around the consolidation of power sources. This practice on one railroad has effected large savings at relatively small costs. A listing showing the cost of effecting the consolidation and the resulting annual savings follows:

Cost	Annual Saving
$ 100	$8,916
13,021	4,532
5,189	757
10,027	6,458
11,642	6,982
2,500	1,800
5,350	1,300

Savings similar to these and almost as great have been effected by the use of capacitors and synchronous motors for improving power factor. These applications avoid the payment of penalties for low power factor and, in some cases, include a premium for high power factor. Costs and savings effected by this means for five installations are, as follows:

Cost	Annual Saving
$8,429.45	$12,765.
911.59	722.
2,801.64	763.25
3,007.80	2,144.82
2,270.37	1,343.75

Election of Officers

The following officers were elected to serve during the coming year: President, P. J. Callahan, supervisor car and locomotive electric lighting, Boston & Maine; vice-president (West), R. E. Gallagher, electrical engineer, Louisville & Nashville; vice-president (East), G. T. Johnson, New York, New Haven & Hartford; member of executive committee (West), Carl E. Wood, engineer train lighting, Chicago, Milwaukee, St. Paul & Pacific, member of executive committee (East), D. G. Thwaites, assistant foreman, office of electrical engineer, Pennsylvania Railroad; members of nominating committee, F. W. Reed, chief electrician, Northern Pacific; G. W. Bebout, electrical engineer, Chesapeake & Ohio; J. E. Gardener, electrical engineer, Chicago,

(*Continued on page 448*)

Eastman Discusses Railroad Future

Urges government loans, regulation of all carriers, reorganizations, elimination of subsidies

MANY aspects of the transportation problem and of the studies being conducted by his organization were discussed by Joseph B. Eastman, federal co-ordinator of transportation, in two addresses at Chicago on October 10. Speaking before the American Life Convention he gave some answers to the questions as to what the government can and should do to aid the railroads, as long as they are privately owned and operated, saying that in the present emergency there is an insistent demand from investors that the federal government "come to the rescue." In this connection he said that "unwarranted public subsidies should be eliminated so far as practicable." In the same address he pointed out some things that he said railroads and investors can do for themselves, and in another address before the Chicago Association of Commerce he referred to the need for regulation to protect the railroads against the shippers and others, as well as to protect the shippers against the railroads.

Fair Degree of Prosperity Needed

"Apparently the business men of the country want the railroads, and in fact all transportation agencies, to be privately owned and operated," he said, "but if they do they must realize that private enterprise and profit go hand in hand, and that it is impossible in the long run for privately-owned transportation agencies to be successfully operated and give good service unless they enjoy a very fair degree of prosperity." He added that of course prosperity cannot be expected in the immediate present but said he was speaking of the future.

At the same time Mr. Eastman took occasion to point out that the fact that the railroads are burdened with debt does not mean that they are overcapitalized or that they are paying too high a rate of interest. He said the unfortunate part about the debt was that the charges are fixed and that the debt situation was relatively better in 1933 than it was in 1920. As to what the government should do he said in part:

What Government Should Do

The government could subsidize the railroads in various ways. There may be occasions when such subsidies of privately-owned industries are justified, but the practice is highly dangerous and likely to be contagious. I find no justification for it in the case of the railroads.

The government can, in default of private credit, lend its own credit to the railroads on good security, and this it has done and is doing. The Reconstruction Finance Corporation has loaned over $400,000,000, and by so doing has saved many railroads from bankruptcy. The Public Works Administration has loaned nearly $200,000,000, and by so doing has enabled many railroads to carry on with needed construction or maintenance work. As a temporary emergency proposition, I find no fault with this policy, so long as it is confined to legitimate needs and is not used to rescue railroads which must sooner or later be reorganized.

The government can and should provide for the adequate public regulation of all important forms of transportation on terms as equal as they can be made, considering differences in conditions. All should be regulated or none should be regulated. The latter proposition is unthinkable. To open up the vital public business of transportation to a cat-and-dog fight of untrammeled competition will not work. It has been tried and has brought forth nothing but chaos. The responsible operators of transportation properties know it will not work and are not urging it. Public regulation is needed for the welfare of the industry itself, to promote order and stability, prevent exploitation, and curb destructive competition and waste.

Plainly this public regulation should be co-ordinated under a single head. It will not do to have it administered at cross purposes by separate agencies, each one of which becomes the partisan of its own particular form of transportation. Co-ordinated federal regulation, in my judgment, is in the interests not only of the railroads but of all other transportation agencies as well. It will prevent the abuses of competition which do none of them or the public any good, it will stabilize conditions, and it will promote co-operation and co-ordination; but it will build up rather than strike down.

I would have public regulation go further in certain directions than it has heretofore done. The old adage that an ounce of prevention is worth a pound of cure has been honored in the breach rather than in the observance. Our regulation in the past has operated too much on the cure basis, dealing with complaints after they arise but not forestalling them. National planning has been conspicuous by its absence. For example, in 1920 somewhere around 20 billions of dollars had been invested in the railroads. Since then, about 6 billions more has gone into the railroads and, according to the best estimates which we can make, an amount greater than the total investment in the railroads in 1920 has gone into other forms of transportation competitive with them in one way or another. All this has been done with little thought of the collateral consequences and without any conception of or planning for an adequate national system of transportation which will furnish the best service to the public at the lowest reasonable cost.

Planning and Prevention Agency Proposed

I hope to see an agency of the government created, either separate from or linked with the Interstate Commerce Commission, which will be removed from the routine duties of regulation, and be free to concentrate on the broader problems of planning and prevention. It would be the duty of such an agency to keep fully informed of all developments in the field of transportation, consult freely with the carrier managements, bring them into conference with each other and with representatives of labor or railroad users where it appears feasible to compose controversies or bring about needed co-operation, advise with the President and Congress and all departments of the government on transportation matters, pursue investigations for the purpose of developing the broad principles of prevention and planning, and promote in every way, and even require if need be, the proper co-ordination of all forms of transportation with each other, both in present operation and in future construction and development.

As a part of public regulation, I would of course provide adequate opportunity for the consolidation or other unification of properties of all kinds and for the pooling of revenues, traffic, or equipment, where such projects can be shown in public hearings to be in the public interest and upon terms which eliminate financial exploitation. Consolidations are no panacea and may easily be carried too far, but they have their place, and it is particularly desirable to provide means whereby they can be accomplished by exchange of securities and without depleting the treasuries of the companies of cash which ought to be used for other purposes. It may be that federal incorporation can be used to advantage.

As a further part of public regulation, also, I would provide every feasible opportunity for the speedy financial reorganization of companies which are in no sound condition to face the future, and upon terms which will do justice to all forms of security holders. The present bankruptcy act is in need of revision and we are working on that problem, but I cannot now tell you the exact form which the revision will take.

Unwarranted public subsidies, direct or indirect, to all forms of transportation should be eliminated so far as practicable. Before long I shall give to the world a huge report on that very complex subject which I believe will be both interesting and illuminating.

The legitimate interests of labor must be protected in con-

nection with transportation economy projects. Those interests do not require that such projects be stopped. On the contrary such a policy is suicidal for labor, for it means the slow decay of the industry to which it is applied. It is only by the lowering of costs that transportation can be developed and employment increased. Our preliminary figures indicate, for example, that the automobile has created a volume of intercommunity travel, stated in terms of passenger-miles, which may be as much as four times the volume ever carried in any one year by the railroads. Labor, however, is fairly entitled to protection against the shocks of sudden economy projects. This has been done on the English railroads, it has been done in other countries, it has been done in some instances in this country, and it can be done here generally, particularly in connection with the new pension policy, without at all stopping progress in the reduction of transportation costs. I do not mean, of course, such a restriction on reduction in railroad employment as is now carried in the Emergency Act.

As to some of the things which he thought railroads and their investors can do to help the situation Mr. Eastman also said:

What Railroads and Investors Can Do

I expect to see the railroads embark upon the transportation business and by a process of benevolent assimilation utilize every form of transportation where it can do a better job than the old rail service can do. In fact certain railroads have already made noteworthy starts in this direction. I except to see very important developments in the use of light-weight metals, new types of motive power, and new types of cars, in both the passenger and the freight services. I expect to see an increase in frequency, speed and comfort of service. I also expect to see a rather complete revamping and simplification of many freight rates and passenger fares.

The railroad industry is far too big and important and efficient to perish. It will continue to have a monopoly of certain forms of transportation. It will remodel its equipment and service and rates to regain lost prestige in other fields. It will surrender certain forms of traffic to other agencies which are better adapted to handle it, but it will utilize these agencies in many situations. Most important of all, a much greater volume of movement of persons and commodities will be developed by all of the agencies, including the railroads. In short I see no good reason for doubting the general railroad future. I do not refer, of course, to the fortunes of particular companies.

New Railroad Association An Encouraging Sign

The recent creation of a new central organization by the railroads is a most encouraging sign of the times. There has long been need for such an organization which could handle matters of common concern with greater authority and more effectively. It is an indication that the day of too intense railroad individualism is passing, and that the pressing need of co-operation for the common good is in the way of realization. It is a pleasure to note that this organization proposes to have a highly developed central research department for the use of all the railroads, utilizing all the facilities which modern science has made available. The avenues for profitable exploration by such a department are almost unlimited.

Permit me, however, to utter one word of caution about this new organization. There are indications that it wishes to be "left alone" in the work of co-ordination without any government meddling. Certainly it ought to have a free hand to operate so long as it operates for the good of the industry and the public advantage. But it must not be forgotten that the railroads now furnish only one part of public transportation. There is grave danger that they will overlook and neglect that fact to their own ultimate injury. There is nothing more important to accomplish than the proper co-ordination of all the forms of transportation, and I know of no agency that can undertake that work except the government. And some outside pressure and stimulus from the government will do the new organization no harm in other ways. Moreover, the hope that by being "left alone" they can avoid the demands of labor for legitimate and reasonable protection is an idle dream.

I shall conclude with a few brief suggestions about matters in which you, as bondholders and creditors of the railroads, should be primarily interested. Creditors can often best serve their own interests by fostering and protecting the interests of their debtors.

There is evidence of a disposition to postpone reorganizations until economies can be realized. But some of them cannot be realized without credit, and postponing reorganizations is expensive, because receiverships are costly. The question then arises whether it is not possible to reorganize now on a basis of fixed charges which will not be an undue load even in times of severe depression, and permit the security holders to recoup when times of better earnings arrive. I realize that there is a difference of opinion and interest between the creditors and the owners in these properties. The problem is to find a reasonable compromise between unreasonable extremities, under which the creditors will be given ample protection and yet the equity holders will be left in the picture with at least a fair chance of eventual salvation. We are working on this matter in connection with the revision of the bankruptcy act and hope to evolve a practicable plan of operation. I have mentioned the point to you, however, because I believe you should not overlook the advantages of the early reorganization of the companies which are now in receivership or bankruptcy, and the possibility of accomplishing such reorganizations in a way which will fairly protect the interests of all who still have a real stake in the property.

The Problem of Fixed Charges

Mentioning the depression and the competition of other forms of transportation as two causes for the present condition of the railroads, Mr. Eastman said that the third factor was the extent to which the railroads are loaded with debt, referring to it as a factor which has caused serious trouble during the depression but has been the source of much misunderstanding. Many people, he said, jump to the conclusion that the railroads are overcapitalized and that the interest on the debt is an extortionate charge on the public served but the investigation of the Interstate Commerce Commission have demonstrated "that in the aggregate the outstanding capitalization is considerably below the probable original cost of the properties and also below their rate-making value. Nor is the interest rate high on the railroad debt, he said.

"I have seen an analysis of railroad bonds still paying interest and having a par value of $8,263,160,686. This shows that 43 per cent of the total pays 4 per cent or less and 89 per cent pays 5 per cent or less. The average interest rate is about 4½ per cent. Only a few railroads are paying dividends, more than a billion and a half of bonds are in default, and the interest which is still being paid is at a relatively low average rate. It is impossible to support a claim that an extortionate return, or anything approaching such a return, is now being exacted on the money which has gone into the railroads.

The evil of the railroad debt is quite another matter. The unfortunate part about debt is that the charges which it entails are fixed and must be paid, if insolvency or bankruptcy is to be avoided. An individual or an industry carrying a heavy debt has great difficulty, as many have discovered to their sorrow, in surviving a severe slump in earnings and is likely to wind up in the hands of the court. In the railroad world there is intense dread of receiverships or bankruptcies, because of the damage which they do to credit and to the general confidence of the investing public, to say nothing of the expense which they have often involved. To avoid such consequences, the property and service may be allowed to deteriorate and suffering be imposed on employees. To escape bankruptcy, in other words, the management may take it out of the property and out of labor in layoffs or part-time work.

Such conditions are unhealthy and would not obtain were it not for the disproportionate debt. This debt will also impair the credit of many companies, even when prosperity returns, for only the soundest securities will for some time attract investment, and debt-ridden companies will not have such securities available. They will thus be handicapped in the rehabilitating and modernization of their properties to gain new traffic under present-day conditions.

The condition is not a new one, nor has it grown worse in recent years. As a matter of fact earnings were so favorable in the boom period that a considerable amount of new stock was issued and the properties were further improved by the heavy investment in them of surplus and reserves. Between 1920 and 1933, stock was increased by $1,184,000,000 and funded debt by $1,375,000,000, or a total of $2,559,000,000, whereas the net investment in road and equipment increased by $5,795,000,000 and other investments by $1,710,000,000, or a total of $7,505,000,000. It will thus be seen that the debt situation was relatively better in 1933 than it was in 1920.

Protecting the Railroads from the Shippers

Addressing an audience composed largely of shippers at the Chicago Association of Commerce meeting, Mr.

Eastman said that in the course of his work he was continually impressed with the fact that it is exceedingly difficult to secure a consideration of the transportation situation from the standpoint of the general public interest or indeed a general interest of any kind.

Take the railroads. A proposal may clearly be good for the industry as a whole, but the ordinary railroad executive or officer is not particularly interested in that fact. What especially concerns him is how it will affect his own individual railroad in its relation to others. The same is true of all other parties in interest. Public regulation was originally devised for the protection of the shippers against the railroads, but I have at times been moved to reflect that it is as much needed to protect the railroads against the shippers, to say nothing of bankers, labor, railroad supply houses, tax gatherers, and the railroads themselves. Some may say that they also need protection against the regulators.

Disregarding the intriguing opportunities for exploration elsewhere, let us consider the shippers, for I presume that this audience is composed primarily of shippers. There are shippers who undoubtedly have needed and may still need protection against the railroads but I have many times seen the railroads in a blue funk for fear that they might offend some powerful shipping interest. The only way in which they dare to speak their minds when dealing with such interests is by process of delegation. If they can find some man to testify or argue who represents all or a group of railroads, and not some particular railroad, they feel relatively safe. Some years ago the railroads in the northwestern district asked for a 5 per cent horizontal increase in all rates. The commission found that they needed more revenue, but that they ought to get it by attack on low commodity rates and not by elevating the entire rate structure. They got together in secret conclave to agree upon a program of this character, and almost did agree, but some one of the conferees, to curry favor, let the cat out of the bag to important shipping interests, and thereupon the program was abandoned. The extent to which the traffic club is swung at railroad heads you probably know better than I do.

I am more concerned at the moment with the relation of the shipper to the entire transportation problem. Individual interests cannot wholly be disregarded, but there never was a time when it was more important to consider transportation from a less selfish point of view and with regard to the best interests of the entire country. As a matter of fact enlightened selfishness will dictate precisely that approach to the problem.

If no thought is given to the development of a well co-ordinated national system of transportation and government money is poured into the construction of new means of transportation without regard to the effect upon those which already exist in the greatest profusion and if, on top of all this, competition between rival forms of transportation is allowed to run riot, there can be no ultimate end but complete demoralization with injury to all and benefit to none. It is for this reason that I hope that shippers will look beyond the immediate and fugitive advantage which they may expect to gain from a transportation free-for-all, and see how much more they have to gain in the long run from a policy of co-ordinated public regulation of all important forms of transportation which will promote order and stability, aim at safe, reliable and responsible service at known and dependable rates, prevent unjust discriminations and destructive competition, encourage co-operation and co-ordination, and steer clear of the path to demoralization and chaos.

Merchandise Pooling Plan Received with Skepticism

Outlining the various studies which have been made or are under way Mr. Eastman discussed at some length the report recommending a plan for pooling merchandise and express traffic, saying in part:

The reception which this report and plan has received from the railroads is about what I anticipated and is based on perfectly normal reactions. It has not been received with open arms but with doubt and skepticism. It has received and is still receiving most careful study. The facts disclosed by the report, including the defects and deficiencies in present methods, have now largely been conceded, as I understand the situation. It has not been conceded that the plan proposed for correcting these defects and deficiencies will produce the economies claimed for it, although a very substantial residue is conceded, or that the plan is otherwise desirable. A few of the executives seem to fear, as happens with many of my activities, that the plan is only one manifestation of a Machiavellian plot on my part to nationalize the railroads. The outstanding difficulty is the fear which individual railroads have that in some way they will fare less well under the plan than rival railroads. It is not claimed that the plan is impracticable, or at all events no evidence to that effect has been presented to me.

All this was to be expected. The important thing is that the defects and deficiencies of present methods of handling this traffic and charging for it are now recognized. Already individual railroads are undertaking to correct some of these matters, so far as it is possible for an individual line to correct them. The leaven is working and the fermentation will go far before it is stopped. The danger is that the railroads will not only reject the plan which we recommended but substitute no other plan for it and leave action to the discretion of the individual railroads. Plainly the evils of the situation cannot be worked out that way. They require collective action if any real progress is to be made. We shall keep at work on this matter, and have by no means reached the end of our rope. If the shippers are interested, I think that they can be of help.

Our other reports are being and will be received in much the same fashion, yet I am confident that they will eventually produce many and important results. I am not discouraged with respect to them nor with respect to the railroad future. The organization of the new central railroad organization is significant and commendable. It is affirmative recognition of the fact that the railroads must co-operate with each other to a much greater degree, and deal collectively and authoritatively with matters of common concern. The day of intense individualism in railroading is passing, and must pass if they are to meet effectively the new conditions which now confront them. Too much need not be expected from the new association, for it is hardly more than a gentlemen's agreement and it will take time to get minds working in the new direction; but it is a distinct step forward.

My own very positive conviction is that the railroad industry is on the verge of very important developments in equipment, operation, service, and rates, and that in this connection it will find that it is able to work with and even to utilize to a large extent new forms of transportation. More and more the railroads will engage in the business of transportation rather than in the business of railroading. More and more the government will undertake to co-ordinate and resolve the differences between the various transportation agencies, and to prevent over-supply and destructive competition. And if they all keep their eyes on the ball and work toward lower transportation costs coupled with better service, the result will be a great increase in the volume of movement, both of persons and of goods.

Not Hatching a Plot for Government Ownership

In another speech before the Trans-Missouri-Kansas Shippers' Advisory Board and the Kansas City Traffic Club at Kansas City, Mo., on October 11 Mr. Eastman also discussed some of the possibilities of railroad terminal unification. Before doing so he said that he gathered that he was suspected by some of his railroad and financial friends of spending much of his time in "hatching a plot for public ownership and operation of the railroads," but that he had discussed that possibility in detail in a report to the President and Congress last January, with the conclusion that he was unwilling to recommend such a plan under existing conditions. "Reserving the right to change my mind if good reason develops," he said, "I have not changed it yet."

Possibilities of Terminal Unification

Kansas City has a peculiar interest in the studies which have been made of terminal unification, Mr. Eastman said, because one such study, typical of what is being done all over the country, has been made by a carrier committee, with V. V. Boatner, director of regional operations, acting as chairman, in Kansas City, which indicates that a plan of unification is physically possible which would save in operation as much as $2,000,000 a year. However, assuming that this is physically possible, he added, there are other hurdles to surmount.

One is the labor difficulty. The savings would be largely at the expense of labor. A provision in the present act protects all employees in the work which they had in May, 1933. An analysis shows, however, that a very considerable percentage of the employees concerned will be eligible for the benefits of the

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Palmer to Succeed Pelley as President of New Haven

Vice-president in charge of accounts will become chief executive on November 1, when resignation of A. A. R. president-elect becomes effective

HOWARD S. PALMER, vice-president of the New York, New Haven & Hartford since November, 1929, has been elected president to succeed John J. Pelley, whose resignation will become effective November 1. As announced in the *Railway Age* of September 29, when his photograph and a sketch of his railroad career were published, Mr. Pelley will become president of the newly-organized Association of American Railroads. This latter is expected to be launched on November 1 since railroads operating more than the necessary 75 per cent of the mileage of roads eligible for membership have assented to the plan.

Howard S. Palmer

The acceptance of Mr. Pelley's resignation and the election of Mr. Palmer came at a meeting of the New Haven board of directors in New York on October 10. The action was announced in the following statement:

"At the close of the New York, New Haven & Hartford Railroad board meeting today, it was announced that the directors had accepted the resignation of President Pelley, effective November 1, 1934, to enable him to take up the larger work in the railroad field in Washington as head of the new organization, known as the Association of American Railroads and recently created in Chicago.

"It was also stated that Howard S. Palmer was elected a director and president of the New Haven Railroad to succeed Mr. Pelley. Mr. Palmer has been vice-president since November 26, 1929, and is a director and vice-president of many of the New Haven Railroad's subsidiaries. He has also acted as assistant to Mr. Pelley during the past year. Mr. Palmer is a New Englander and has spent his entire business life in railroad service, having worked in the operating, traffic, treasury and accounting departments. He started in the operating department of what is now a part of the Maine Central. Mr. Palmer has been connected with the New Haven Railroad for over 27 years in various capacities. Four years of this time he was stationed in Boston."

Mr. Palmer will bring to the presidency of the New Haven a background of experience in railway finance and of intimate association with the New Haven's particular problems in this connection. He has been in its accounting department since 1907, serving as comptroller from 1920 to 1929 and as vice-president in charge of accounts from 1929 up to the present time. When this record is coupled with Mr. Palmer's early experience in other departments and his recent association with broad executive problems as assistant to Mr. Pelley, he stands out as one admirably fitted to carry on the work of the latter at this time when the financial problems of the New Haven, like those of many other roads, are to the fore.

Only last week did the New Haven negotiate its latest financial hurdle when the Interstate Commerce Commission, finding that the road is not in need of financial re-organization at the present time, approved a loan to it of $6,000,000 from the Reconstruction Finance Corporation. The New Haven, as pointed out in last week's *Railway Age*, already had from the R.F.C. a loan of $1,000,000 in addition to a "work loan" of $651,456, and has also received advances for capital and maintenance purposes totaling $3,440,000 from the Public Works Administration. Also there are bank loans totaling $14,900,000 as well as a 1934 maturity of a $1,606,157 loan from the Railroad Credit Corporation.

Howard Shirley Palmer was born January 13, 1885, at East Sumner, Me. He was educated in the public schools and entered railway service prior to 1901, working during his summer vacations as telegraph operator and relief agent for the Portland & Rumford Falls (now part of the Maine Central). Entering the service of the Portland & Rumford Falls on a full-time basis in 1901, he served during the following six years in various positions in its passenger and freight accounting departments. Mr. Palmer became associated with the New Haven in 1907 and served successively thereafter until 1915 as clerk in the freight accounting department, assistant traveling auditor, express accountant and statistical accountant. From 1915 until 1918 he was auditor of disbursements and during government operation, from 1918 until 1920, he was federal auditor of the New Haven.

Mr. Palmer was appointed comptroller of the New Haven in 1920 and served in that capacity until November, 1929, when he was elected vice-president in charge of accounts. He is also comptroller of the New England Steamship Company, the Hartford & New York Transportation Company and the New York Connecting Rail-

road. Mr. Palmer has been active in the affairs of the Railway Accounting Officers Association, having served as its president during 1931-32.

Electrical Men Meet in Chicago

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Burlington & Quincy; C. P. Kahler, electrical engineer, Oregon Short Line; C. G. Winslow, supervisor electric light and power, Michigan Central.

Supply Men Meet

At the annual meeting of the Railway Electrical Engineer Supply Manufacturers' Association, held during the A.R.E.E. Convention, the following officers were elected to serve during the ensuing year: President, Charles Dubsky, Crouse-Hinds Company; senior vice-president, C. B. Harlow, Benjamin Electric Manufacturing Company; junior vice-president, R. I. Baird, Electric Storage Battery Company; secretary and treasurer, Edward Wray, Railway Purchases and Stores. Executive committee: E. H. McNeill, Okonite Company; L. A. Spangler, Westinghouse Electric & Manufacturing Company; William M. Lalor, Ideal Commutator Dresser Company; A. S. Anderson, Adams & Westlake Company; L. G. Mockenhaupt, Manufacturers' Representative; H. A. Matthews, Peerless Equipment Company; E. J. O'Donnell, Graybar Electric Company; E. A. Oas, General Electric Supply Corporation; B. G. Durham, Albert & J. M. Anderson Company.

The number of exhibitors was 51. Out of the 130 railroad men who registered 82 are recorded as having visited every exhibit.

Eastman Discusses Railroad Future

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new railroad retirement act, when it takes effect. You would be surprised to know how old some of the men are who are now at work in the Kansas City yards. It is quite possible, also, to devise, as a substitute for the present labor restrictions in the emergency act, a system of dismissal compensation which will give similar but lesser benefits to the younger men who may be laid off. Such systems are in extensive use throughout the world and have even been employed on railroads in this country. With such a system and the retirement act, the railroads would gain immediately a substantial measure of the economies, and the gain would increase steadily and quite rapidly each year thereafter.

Another very sizeable hurdle is the attitude of the railroads themselves. Railroads set great store by strategic advantages in terminal location. I believe that they greatly overestimate such supposed advantages, but nevertheless they entertain very strong convictions on the subject. In every large city there are some railroads serving it which think that they have positive and very important advantages over others. Schemes of terminal unification do not appeal to such railroads, because they fear that a loss in their relative advantage over other railroads may result. They are willing to forego a share in a saving of even as much as $2,000,000 in order to prevent such a sacrifice of strategic location. As a means of testing out the extent and importance of this obstacle, I have asked the railroads entering Kansas City to undertake negotiations with respect to the proposed terminal unification just as if it were immediately contemplated, in order to find out whether it is possible for them to agree among themselves. If they cannot agree, I have asked them to report to me the reasons for such inability, in order that I may study them and consider whether some means of removing the obstacles cannot be found.

A further hurdle is the attitude of the community. Individual railroads are exceedingly suspicious of change, and are always ready to believe that it will result in some relative disadvantage to them, however good it may be for others or for the industry as a whole. I find that communities are equally wary and full of doubts. Already I have received a report from the Kansas City Chamber of Commerce on the proposed unification, and that report is adverse. While I have not yet had an opportunity to go thoroughly into this matter, as I shall do eventually, present information leads me to believe that the chamber is under some misapprehensions as to what is proposed and as to the probable results. However, no fear need be entertained that their objections will not receive most careful attention.

This matter of terminal unification illustrates another point. As a preliminary guess, Mr. Boatner informs me that through such unifications as are physically practicable it is probable that the railroads of the country could save somewhere between 35 and 50 millions of dollars each year, either immediately or eventually, dependent upon the provision for labor. The railroads need that sum, and need it badly. They will need it even if business conditions materially improve.

A Communication . . .

Union Members Favor Curb on Railway Competitors

Bakersfield, Calif.

To the Editor:

In your editorial in the edition of June 9 ult. you make some statements regarding the non-cooperation of organized railroad labor in putting over "approved" legislation, which I feel is quite unfair. "Approved", or company-introduced legislation, in the last Congress were three measures, of which only one, the killing of the St. Lawrence Ship Canal Treaty in the Senate, was successful. The others never got to a roll-call vote.

I believe you will have to credit the defeat of this treaty to pressure exerted by the twenty-one standard railroad unions on their senators. It was a pet Administration measure, too, remember. Fourth Section relief, the Rayburn highway traffic regulation bill and that placing coastwise water transportation under I.C.C. were actively backed by the rank and file union men.

Here in California we succeeded in pledging the entire California delegation to the Pettengill bill. Personally I wrote to each of our two senators and 20 representatives, circulated a set of resolutions to all B. of L. E. divisions in California and succeeded in getting an endorsement through our local Chamber of Commerce.

Of the brotherhood legislative program of six measures, but one, the Revised Railway Labor Board, was successful. This was not even unanimously endorsed or backed by the unions, some declaring it to be "a two-edged sword."

The railway pension law is not to be regarded as any victory for the labor executives as you yourself stated in your issue of June 19, it was the Royster bill with modifications. The rank and file have known all along on which side their bread was buttered and have done their best to put "approved" legislation over and have not quit trying.

Under the present gag rules in Congress the speaker, floor leader and party whip constitute a majority and nothing has as yet succeeded in even getting before the House unless bearing the stamp of the Administration's favor. Even the overriding of the President's veto on the independent office appropriations bill was only a skillful political expedient.

No matter what you may think of the executives of the twenty-one standard railway unions, give the hardworking, unselfish rank and file credit for their efforts to improve railway employment conditions by supporting legislation promising more business for the railroads. In the latter class you must include all state organizations and regional formations.

Walter R. Carter.

[The views expressed by Mr. Carter are discussed in an editorial elsewhere in this issue.—Editor.]

NEWS

Railway Net for August Below Last Year's Figure

But cumulative 1934 total remained above 1933 at close of the eight-months period

Class I railroads of the United States for the first eight months of 1934 had a net railway operating income of $300,702,141, which was at the annual rate of return of 1.88 per cent on their property investment, according to reports compiled by the Bureau of Railway Economics. In the first eight months of 1933, their net railway operating income was $280,848,913, or 1.74 per cent.

Operating revenues for the eight months totaled $2,188,560,046, compared with $2,006,077,467 for the same period in 1933, an increase of 9.1 per cent. Operating expenses for eight months amounted to $1,632,477,088, compared with $1,466,447,454 for the same period in 1933, an increase of 11.3 per cent.

Class I railroads in the first eight months of 1934 paid $169,691,083 in taxes compared with $177,567,141 for the same period in 1933, a decrease of 4.4 per cent. August alone, the tax bill of the Class I railroads amounted to $20,590,706, a decrease of $2,106,236 or 9.3 per cent under August, 1933.

Thirty-three Class I railroads failed to earn expenses and taxes in the first eight months of 1934, of which 9 were in the Eastern district, 7 in the Southern, and 17 in the Western district.

Class I railroads for August had a net of $39,677,337, which, for that month, was at the annual rate of return of 1.39 per cent. In August, 1933, their net was $61,401,986, or 2.13 per cent.

Operating revenues for August amounted to $282,679,430, compared with $297,030,894 in August, 1933, a decrease of 4.8 per cent. Operating expenses in August totaled $211,706,258, compared with $202,470,716 in the same month in 1933, an increase of 4.6 per cent.

CLASS I RAILROADS—UNITED STATES

	1934 Month of August	1933	Per cent of Increase or Decrease
Total operating revenues	$282,679,430	$297,030,894	4.8 Dec.
Total operating expenses	211,706,258	202,470,716	4.6
Taxes	20,590,706	22,696,942	9.3 Dec.
Net railway operating income	39,677,337	61,401,986	35.4 Dec.
Operating ratio—per cent	74.89	68.16	
Rate of return on property investment	1.39%	2.13%	
Eight Months Ended August 31			
Total operating revenues	$2,188,560,046	$2,006,077,467	9.1
Total operating expenses	1,632,477,088	1,466,447,454	11.3
Taxes	169,691,083	177,567,141	4.4 Dec.
Net railway operating income	300,702,141	280,848,913	7.1
Operating ratio—per cent	74.59	73.10	
Rate of return on property investment	1.88%	1.74%	

Class I railroads in the Eastern district for the eight months had a net of $183,570,948, at the rate of 2.34 per cent. For the same period in 1933, their net was $179,243,598, or 2.27 per cent. Operating revenues in the Eastern district for eight months totaled $1,127,342,984, an increase of 9.3 per cent above the corresponding period in 1933, while operating expenses totaled $815,025,368, an increase of 12.5 per cent. Railroads in the Eastern district for August had a net of $18,093,195, compared with $35,992,971 in August, 1933.

Class I railroads in the Southern district for eight months had a net of $36,522,317 which was at the rate of 1.77 per cent. For the same period in 1933, their net amounted to $38,685,321, at the rate of 1.84 per cent. Operating revenues in the Southern district for eight months amounted to $274,683,122, an increase of 6.3 per cent above the same period in 1933, while operating expenses totaled $210,304,902 an increase of 9.6 per cent. Railroads in the Southern district for August had a net of $2,910,171, compared with $5,470,783 in August, 1933.

Class I railroads in the Western district for eight months had a net of $80,608,876, at the rate of 1.33 per cent. For the same eight months in 1933, they had a net of $62,919,994, at the rate of 1.03 per cent. Operating revenues in the Western district for eight months amounted to $786,533,940, an increase of 9.9 per cent above the same period in 1933, while operating expenses totaled $607,146,818, an increase of 10.4 per cent. For August, the railroads in the Western district reported a net of $18,673,971. The same roads in August, 1933, had a net of $19,938,232.

R.F.C. Head Calls Conference on Minneapolis & St. Louis

Chairman Jones of the Reconstruction Finance Corporation has written to the presidents of eight other roads in the territory of the Minneapolis & St. Louis inviting them to a conference on October 15 to consider the acquisition of parts of the road by each.

Survey Shows Opposition to Government in Business

National Industrial Conference Board makes public replies to recent questionnaire

Public opinion in this country is overwhelmingly opposed to further interference of government with business, according to replies received by the National Industrial Conference Board from a questionnaire recently submitted to all newspaper and farm journal editors in the United States. To one question, asking "Does public opinion in your community favor federal government going into business in competition with transportation companies?" a total of 4,872 replies were received of which 4,260 or 87.4 per cent were in the negative.

The questionnaire was sent to 12,076 editors who were not asked to record their own opinions or the opinion of their papers, but were requested only to state to the best of their ability whether or not public opinion in their community favored or opposed certain economic and social policies. The questionnaire included 22 principal questions dealing with four main topics as follows: Social insurance; cost and organization of government; government and business; and government and labor. Under government and business, 93.6 per cent of the replies reported a sentiment unfavorable to control of the management of private business enterprises by government bureaus or officials; 94.9 per cent were unfavorable to government competition with private industries; 74.2 per cent were opposed to the use by the government of its taxing power or other powers for the purpose of redistributing income; 94.3 per cent replied in the affirmative to a question as to whether public opinion in the community believed that the hope of profits is essential to the progress of business enterprise.

Under government and labor, 94.1 per cent reported a sentiment opposed to making membership in a labor union a necessary condition of employment. Under social insurance, 58.2 per cent were opposed to unemployment insurance while 64.6 per cent were favorable to a compulsory government system of old age pensions.

The editors were also asked to express their present opinion concerning the factors that would contribute most towards increasing business confidence. In this connection from 66 to 73 per cent noted "Decreasing government control," "Decreasing government expenditure," "Balancing budget" and "Stabilizing currency."

Board Reports Adversely on Canal Across Florida

Would not be self-liquidating under P. W. A. regulations for repayment and amortization

The proposed Atlantic-Gulf ship canal across Florida is outside the normal, self-liquidating requirements under P.W.A. regulations for repayment and amortization, according to the report of a special board appointed to review the project. The board, composed of Army engineers and P.W.A. representatives, reported the canal could earn operating and maintenance expenses, but would not retire a bond issue even at a 2 per cent interest rate within a reasonable period. The loan necessary for construction of the canal could not be repaid without interest in less than 80 years, the report said.

The board was instructed to make an economic study to determine the possibility of the project liquidating a loan with interest at 2 per cent and repayment of the cost of construction without interest in 50 years. The board had reported in June that the estimated cost of a 30-foot sea-level canal would be $143,000,000, exclusive of interest during the six-year period of construction. The report included the following:

"To determine the probable revenue of the canal it has been necessary to estimate the development of commerce in the Gulf over proposed period of liquidation. Estimates so far into the future can be at most but approximations.

"The cargo tonnage of the Gulf consists largely of petroleum and its products. In 1931 these constituted about 75 per cent of the total waterborne cargo tonnage available for economical canal movement. The continuing availability of this large item of commerce is fundamental to the liquidation of the cost of the canal. Unfortunately oil is a rapidly decreasing resource.

"To be self supporting, pay interest at 2 per cent, and to liquidate the cost of the canal within 50 years, the revenue from carriers of petroleum and its products, in addition to the revenue derived from local traffic and carriers of other commodities, would be dependent upon a movement of approximately 18,000 million barrels of petroleum, representing a recoverable reserve of 54,000 million barrels, or over four times the amount estimated by the board to be available for canal movement.

"The board estimates that the traffic in other commodities, amounting at present to about 25 per cent of the Gulf waterborne cargo tonnage available for economical movement through the canal, will increase annually, but the increment will be too small by a wide margin to provide revenues sufficient to produce a favorable financial result.

"Another uncertainty attaches to the estimates of revenues from this project because operators of shipping in this country, accustomed to have free use of public waterways, have displayed a singular apathy toward the proposed improvement, particularly if tolls be charged. A substantial part of the proposed canal route is now a free waterway improved by the federal government.

"To insure the general use of the canal by shipping, the board finds tolls must be substantially less than ship operating costs for the time which would be saved by vessels passing through the canal. Based upon the best available data and an investigation of the shipping which could economically use the canal, the board is of the opinion that tolls should not exceed an average of eight cents per net registered ton. The estimated revenue on this basis would equal approximately 75 per cent of the total estimated ship operating costs for the time saved by vessels transiting the canal.

"The revenue accruing from a toll of 8 cents per net registered ton upon the estimated shipping, plus revenues from local traffic and non cargo vessels, would not retire a bond issue even at a 2 per cent interest rate.

"The canal would earn operating and maintenance expenses and theoretically the cost of construction could be repaid without interest in 80 years. However, a forecast for such an extended period is of doubtful value. Without repaying the cost of construction, revenues derived from tolls at 8 cents per net registered ton would pay operating and maintenance expenses and an average of about 1.3 per cent per annum on the first cost.

"The advocates of the proposed improvement anticipate the following collateral and indirect benefits: Relief in the present emergency; stimulation of commerce and shipping; adjustment of freight rates and mail subsidies; reduction in hazard of shipping during the hurricane season; value to shipping and possibly to the Army and Navy during a war and provision of a third route to and from the Panama Canal. These cannot be given a monetary value in a financial report."

Railway Employment Again Reduced

The number of railway employees at the middle of the month of September was 1,023,313, according to the Interstate Commerce Commission's compilation of reports made by the railroads. This was a decrease of .82 per cent as compared with the number in August and of .67 per cent as compared with the number in September, 1933. Professional, clerical, and general employees, and the group of yardmasters, switch-tenders, and hostlers, showed small increases as compared with last year but other groups showed decreases.

I.C.C. Suspends Pick-Up and Delivery Tariff

The Interstate Commerce Commission has suspended from October 6 to May 6, 1935, the operation of schedules published in the Victor Lynn Transportation Company's tariff, proposing to establish free pick-up and delivery truck service between Salisbury, Md., and some 230 points in Delaware, Maryland and Virginia, located in the so-called Delmarva peninsula, on rail and water traffic moving in connection with the Victor Lynn Transportation Company, which would result in reductions in rates to or from the affected points.

Railway Magazine Editors Hold Meeting at Cleveland

Methods of further improving the character of publications dominate discussions

Methods for further improving the character of railroad employees' magazines were the chief subjects discussed at the semi-annual meeting of the American Railway Editors Association at Cleveland, Ohio, on October 2. In addition to this consideration of the problems of magazine publishing, Robert Selph Henry, regional research director of the Association of Railway Executives at Nashville, Tenn., addressed the meeting on "Yesterday's Railroads," while at a dinner L. C. Probert, vice-president of the Chesapeake & Ohio, spoke on "The State of the Union."

Officers elected for the ensuing year are President, C. G. Burke, associate editor of the Union Pacific magazine; first vice-president, D. Field Brittle, editor of the "Rail" of the Pere Marquette and Chesapeake & Ohio; second vice-president, Stanley W. Todd, editor of the Express Messenger, the magazine of the Railway Express Agency; and secretary and treasurer, John Ferrick, secretary to the editor of the Missouri Pacific magazine.

During the discussion of employees' magazines, Robert Mitchell of the Faun Art Studio analyzed cover designs explaining how they can be made more appealing and interesting and telling of the methods employed by general magazines in their efforts to market their products. He also offered specific suggestions for enhancing the appearance of the covers of railroad employee magazines. F. H. Brehm of the Eastman Kodak Company, Rochester, N. Y., described improvements in photography and discussed ways in which various effects may be secured in photographs.

Mr. Henry reviewed railroad experiences of the past showing how the railroads in their early days were confronted with crises as they are at present. He also cited some of their many accomplishments, referring to their success in standardizing the 53 different times that prevailed in the United States in 1883.

Mr. Probert recommended that the scope of railroad magazines be enlarged so that they might become an agency of information for railroad customers and the public which will bring about a better understanding between the people who use them and the people who operate them. He also suggested that railroad magazines give serious consideration to threatened government ownership of railroads and attempt to thwart the efforts of politicians and those seeking regimentation of industry.

"Kept People"

Jesse Jones, at Monday's press conference, classified the barge lines using artificial inland waterways as "kept people."

Well, Mr. Jones, who's "keeping" them?

—*From The Wall Street Journal.*

Court Hears Arguments on Railway Pension Act

Complaint of carriers comes before the Supreme Court of the District of Columbia

A hearing was begun before Chief Justice Wheat of the supreme court of the District of Columbia on October 10 on the bill of complaint filed in August by the railroads, the express company and the Pullman Company seeking an injunction to restrain the operation of the railroad retirement act. E. E. McInnis, general counsel of the Atchison, Topeka & Santa Fe, in an opening statement outlining the railroad contentions, said that counsel for the roads and for the Railroad Retirement Board had made every effort to cooperate to expedite the case, because, unless the operation of the law is stayed it will be necessary for the railroads to pay into the fund to be administered by the board $15,000,000 of their own money and half that much deducted from the pay of their employees, on November 1 and every quarter thereafter. Although the railroads had originally applied for a temporary injunction, he said that in all likelihood counsel would agree that this would be the final hearing. Mr. McInnis said the railroads are attacking the law on the ground that it is in violation of the fifth amendment to the constitution in that it takes the property of the railroads without due process of law and that the imposition of a compulsory pension system does not constitute a regulation of interstate commerce. He repeated the arguments made in the bill of complaint, stating that the law applies to employees not engaged in interstate commerce, as well as to many who are not employed by the railroads and that it is arbitrary and unreasonable in many respects, particularly as a result of the provisions for pooling as between the railroads themselves and between them and their employees, as well as the pooling of employee service on different railroads. He said it would be emphasized that the law attempts to regulate wage relations between the railroads and their employees which are not subject to Congressional regulation in the absence of an emergency. One point made was that the law creates pension rights for some 80,000 men who had left the service of the railroads in the year before it was passed as well as to some 6,000 who had been dismissed for cause. Mr. McInnis also made the point that the law imposes enormous burdens on the railroads at a time when more railroads are in debtor's courts than at any previous time in history and when a large part of the traffic of the country is being handled by other forms of transportation to which the new law does not apply and which Congress has refrained from regulating.

After Hammond Chaffetz, of the Department of Justice, had made a brief statement outlining the position of the retirement board, Mr. McInnis filed a series of affidavits containing factual data in support of the railroad bill. Mr. Chaffetz said that the purpose of Congress can best be determined by a showing of what a retirement act is likely to do for the railroad industry and he answered the argument that it deals with employees not engaged in interstate commerce by saying that it deals with the entire railroad system. He denied explicitly that the law constitutes wage regulation, saying there is nothing in it to prevent any agreement between the railroads and their employees as to the amount of the wages, and he contended that it does not attempt to provide for compensation for prior service but merely uses prior service as a measure for annuity payments. He said the purpose of the law is to retire superannuated employees and that it is necessary to make some provision for them and he answered railroad charges as to alleged discriminatory features of the law by saying that the amounts involved are insignificant in relation to the total and that some of the features of the law criticized on this score were necessary to get the plan started. "We shall point out," he said, "that this issue came about because the existing railroad systems had threatened to break down during the depression and Congress was not dealing with a temporary situation.'

Chief Justice Wheat said it was clear that the main question was as to whether a compulsory retirement act is a regulation of interstate commerce.

Ohio Valley Board

The Ohio Valley Transportation Advisory Board will hold its next meeting at the Neil House, Columbus, Ohio, on Monday, October 15. W. J. McGarry (A.R.A.), will discuss national transportation conditions. At the luncheon, Henry A. Palmer, editor of the Traffic World, will speak on government ownership of railroads.

Denver-Chicago Time Cut

The Chicago, Burlington & Quincy and the Union Pacific-Chicago & North Western, on October 14, will reduce the running time of the "Aristocrat" and the "Columbine" of these lines, respectively, 30 min, or from 25 hr. 45 min. to 25 hr. 15 min. for the 1,047 miles. Both trains will leave Denver at 5 p.m. as at present and will arrive in Chicago at 7:15 p.m. the following evening instead of at 7:45.

New Steamship Service Between Miami and Havana Authorized

Upon joint application of the Atlantic Coast Line and the Florida East Coast the Interstate Commerce Commission has granted authority under section 5 of the interstate commerce act for the installation of new service by the Peninsular & Occidental Steamship Company between Miami, Fla., and Havana, Cuba. The commission found that the proposed new service will compete with railroads which control the water carrier by stock ownership, but that it will be operated in the interest of the public, will be of advantage to the convenience and commerce of the people, and will neither exclude, prevent, nor reduce competition on the route by water.

Urges Use of P.W.A. Funds for Crossing Eliminations

Security Owners Association lists benefits of such a program in letter to Ickes

Allotment of public works funds of $1,400,000,000 for the elimination of 25,694 railway grade-crossings in Eastern states, which would require more than 9,000,000 man-months of labor, as a part of the relief program for the coming winter recommended to President Roosevelt by the United States Conference of Mayors, is urged in a letter to Public Works Administrator, Harold I. Ickes, by Milton W. Harrison, President of the Security Owners Association, made public October 10. Not only would 90 per cent of such expenditures go directly into wages, the letter says, but they would be spent in congested areas where unemployment is greatest and public purchasing power lowest. Mr. Harrison's letter follows in part:

"On economic grounds, as well as public safety required through widespread use of motor vehicles, grade-crossing elimination becomes increasingly important. The railroads stand on the threshold of a new era of high speeds. Advent of newly designed trains, travelling at higher speeds, makes obsolete "Stop, Look and Listen" signals. In the modernization of transportation, over or under-passes for highway traffic are vitally a part of highways themselves.

"Yet in Eastern states alone, where unemployment problems are most acute, there are 25,694 surface crossings, menacing alike to motorists and to railroad operation. Their elimination requires the expenditure of approximately one billion four hundred million dollars, while more than nine million man-months of work, it is estimated, could thus be provided. Completing such a large-scale program in three years instead of the twenty normally required, would appear a constructive suggestion for the present emergency.

"Since the Administration has indicated that the C.W.A. may not be revived this winter, the task of finding economically sound public works of sufficiently broad range, which would benefit substantially large numbers of unemployed in or near leading centers of population, is more serious than a year ago. Self-liquidating projects likewise are fewer in number. Municipalities are reluctant to increase borrowings from the federal treasury. Thus the problem would seem to call for a greater degree of cooperation between private industries, like the railroads, and national recovery agencies.

"Financially, of course, the railroads are in no position to undertake what the Mayors designate as essentially a relief project. Under steadily rising costs and the recently enacted pension bill, their own revenues are too depleted to stand further non-revenue-producing capital burdens. These improvements, being primarily in the interest of public safety, have in the past been carried on with joint company and state appropriations. They are now reduced largely because neither railroads nor the states, under pressure from more immediate problems,

could continue to provide the needed funds.

"Resumption of this work on a comprehensive basis belongs logically, it would appear, within the realm of the government's Public Works program. When it is recalled that federal assistance to state highways has reached a total of $2,308,000,000 since 1917, the effect of which was to divert traffic from the carriers, the extension of similar aid to the railroads would seem to be justified. The entire cost should be covered by definite grants of P.W.A. funds, thus eliminating long and tortuous delays required for legislative action by the several states. Only through this simplified procedure can the program be made to play a part in this winter's relief needs.

"Under these considerations and provided that the policy of large stimulative outlays is to be continued by the federal government, the Security Owners Association, supports this constructive proposal put forward by the United States Conference of Mayors."

Illinois Chamber of Commerce Luncheon

The Illinois Chamber of Commerce will hold its annual transportation luncheon in the grand ballroom of the Stevens Hotel, Chicago, on October 19. Samuel O. Dunn, chairman of the board of the Simmons-Boardman Publishing Company and editor of the *Railway Age*, will speak on The New Deal in Industry and the Old Deal in Transportation.

Truckers Complain of Railroad Delivery Charges

The Merchant Truckmen's Bureau, of New York, has filed a complaint with the Interstate Commerce Commission against the separate charges made by the Erie and Pennsylvania for trucking service in New York between stations and places of business or residences on the ground that they are unreasonably low in proportion to the actual cost of the service as represented by the payments made by the railroads for the use of the vehicles.

Formal Assents Given for Organization of New Railroad Association

Railroads representing more than three-fourths of the mileage of the roads that were members of the Association of Railway Executives and the American Railway Association having filed written agreements assenting to the plan for the organization of the Association of American Railroads, a meeting of the board of directors of the new association has been called to be held in New York on October 12 to complete the organization and fix a date upon which the plan shall become effective.

15,000 Railway Employees 70 Years of Age

The names of approximately 15,000 railway employees who have performed service since June 27, 1933, who have reached the age of 70 have been reported by the railroads to the Railroad Retirement Board in response to its recent request. Of these about 2,000 have been pensioned under railroad pension plans. The board is planning to ask the roads shortly for the names of those who have reached the age of 65 who would be entitled to pension annuities after next February 1. The board has moved its offices from temporary quarters in the Interstate Commerce Commission Building in Washington to the Tower Building.

Pennsylvania Board of Adjustment for M. W. Employees

A System Board of Adjustment, similar to that recently established in its train service department, has been formed on the Pennsylvania for the settlement of differences with employees in the maintenance of way department. The authority of this board will be final in the settlement of disputes, and no appeal can be taken to regional or national authority. Both boards have been established under the amendment to the Railway Labor Act passed by the last Congress. Six of the 12 members are to be selected by the road and six by the employees; and a two-thirds vote will be necessary to reach a decision.

Railroad Development Proposed in China

Julian Arnold, commercial attache in Shanghai, China, for many years, on a recent visit to Washington reported to Secretary Roper of the Department of Commerce that the central and provisional governments of China and banking interests are turning their attention to the need for the development of greatly increased transportation facilities, railroad and other, in China and that this presents opportunities for the export of railroad equipment from this country. Consideration is being given to the possibility of the construction of a considerable mileage of railroad line if arrangements can be made for the purchase and financing of second-hand rails of 70 to 80-lb. steel and also passenger and freight car underframes and trucks and locomotives.

Net Deficit for Seven Months $31,751,063

Class I railroads for the month of July had a net deficit after fixed charged of $7,036,117, as compared with a net income for July, 1933, of $29,847,641, according to the Interstate Commerce Commission's monthly compilation of selected income and balance-sheet items. For the seven months ended July 31 the net deficit was $31,751,063, as compared with a deficit of $71,356,364 for the corresponding period of last year. Dividend declarations for the seven months period this year amounted to $53,000,000, as compared with $39,000,000 for the corresponding seven months of 1933. The commission's summary follows:

SELECTED INCOME AND BALANCE-SHEET ITEMS OF CLASS I STEAM RAILWAYS

Compiled from 143 reports (Form IBS) representing 149 steam railways

TOTALS FOR THE UNITED STATES (ALL REGIONS)

For the month of July 1934	For the month of July 1933	Income Items	For the seven months of 1934	For the seven months of 1933
$35,220,892	$64,752,606	1. Net railway operating income	$261,024,801	$219,481,525
14,226,108	16,209,509	2. Other income	101,903,927	102,912,006
49,447,000	80,962,115	3. Total income	362,928,728	322,393,531
11,216,388	11,451,916	4. Rent for leased roads	77,845,051	77,018,397
43,484,877	44,239,420	5. Interest deductions	304,035,569	310,016,865
1,781,852	*d 4,576,862*	6. Other deductions	12,799,171	6,714,633
56,483,117	51,114,474	7. Total deductions	394,679,791	393,749,895
d 7,036,117	29,847,641	8. Net income	*d 31,751,063*	*d 71,356,364*
		9. Dividend declarations (from income and surplus):		
1,775,002	685,306	9-01. On common stock	44,990,871	32,516,620
509,835	509,835	9-02. On preferred stock	8,906,584	7,263,814

BALANCE-SHEET ITEMS

Selected Asset Items	Balance at end of July 1934	Balance at end of July 1933
10. Investments in stocks, bonds, etc., other than those of affiliated companies (Total, Account 707)	$760,486,224	$744,755,614
11. Cash	$272,779,063	$279,401,732
12. Demand loans and deposits	39,572,620	41,708,208
13. Time drafts and deposits	43,126,104	41,910,582
14. Special deposits	42,624,842	21,406,445
15. Loans and bills receivable	6,264,149	10,489,063
16. Traffic and car-service balances receivable	51,905,971	53,283,187
17. Net balance receivable from agents and conductors	44,115,639	47,445,986
18. Miscellaneous accounts receivable	143,948,396	134,419,343
19. Materials and supplies	311,273,174	291,884,150
20. Interest and dividends receivable	40,884,409	35,383,295
21. Rents receivable	2,704,394	1,928,279
22. Other current assets	4,069,310	6,445,676
23. Total current assets (items 11 to 22)	$1,023,268,693	$965,705,966
Selected Liability Items		
24. Funded debt maturing within 6 months*	$72,929,936	$100,840,544
25. Loans and bills payable†	$319,453,184	$338,974,063
26. Traffic and car-service balances payable	68,370,461	72,791,843
27. Audited accounts and wages payable	220,986,450	199,401,201
28. Miscellaneous accounts payable	49,413,998	55,373,995
29. Interest matured unpaid	269,090,925	188,607,058
30. Dividends matured unpaid	8,817,092	7,782,652
31. Funded debt matured unpaid	274,841,467	98,238,746
32. Unmatured dividends declared	8,015,592	955,117
33. Unmatured interest accrued	105,051,870	108,807,662
34. Unmatured rents accrued	25,798,179	23,289,166
35. Other current liabilities	15,282,622	15,400,798
36. Total current liabilities (items 25 to 35)	$1,365,121,840	$1,109,622,301
37. Tax liability (Account 771):		
37-01. U. S. Government taxes	$35,624,300	$34,615,596
37-02. Other than U. S. Government taxes	147,401,215	163,415,541

* Includes payments which will become due on account of principal of long-term debt (other than that in Account 764, Funded debt matured unpaid) within 6 months after close of month of report.
† Includes obligations which mature less than 2 years after date of issue.
d Deficit.

Union Pacific's New Train to be Exhibited

The Union Pacific's second streamlined train is nearly completed at the Pullman shops and is to be taken to Los Angeles where it is planned to exhibit it on Sunday, October 21. The train will then be taken to Chicago and thereafter to New York and other Eastern cities for display.

Investigation of Railway Contracts with Telegraph Companies

The Telegraph Division of the new Federal Communications Commission has issued an order providing for an investigation with respect to contracts between telegraph companies and "other common carriers," including railroads, for exchange of services for the purpose of determining whether they are violative of law or adversely affect the public interest. The Postal Telegraph-Cable Company has made some complaints to the commission regarding contracts between the Western Union company and the railroads. At the hearing any telegraph company having such contract is to show cause why the Telegraph Division should not enter an order declaring that the provisions of such contracts which create or permit the existence of any exclusive right, benefit, or privilege are contrary to public interest.

P. R. R. Shop Employees Organize

Representatives of the Pennsylvania's shop crafts employees, at a meeting last week in New York, organized a new association which it is contemplated will become affiliated with the recently-organized Brotherhood of Railroad Shop Crafts of America. The latter, which was formed last July, as reported in the *Railway Age* of July 14, is a new shop-crafts labor-movement, having no connection with the American Federation of Labor and designed to afford railway shop employees an opportunity to conduct their affairs independently of the latter.

The newly organized unit of P. R. R. employees elected the following officers: President, T. H. Davis, Woodlyne, N. J.; system vice-president, E. W. McClain, Harrisburg, Pa.; system secretary-treasurer, Paul Reese, Ft. Wayne, Ind. Mr. Davis is also national organizer for the Brotherhood of Railroad Shop Crafts of America. The delegates at the New York meeting also appointed a system negotiating committee to meet with the Pennsylvania management for the purpose of formulating a set of rules, working conditions and rate schedules for shopmen. They further voted to establish a system board of adjustment for the settlement of grievances.

N. R. A. to Consider Bus Fares

Acting on recommendation of the Industrial Appeals Board, the N.R.A. has scheduled a public hearing to determine the reasonableness of existing schedules of minimum bus fares between New York and Washington, New York and Chicago, and intermediate points. The hearing will be held on October 19 at Washington, D. C., by Deputy Administrator C. P. Clark. The schedules had been drawn up by the code authority for the motor bus industry and approved by the Administration. The Nevin Transit Company and the Seven States Transit Company protested the rates and appealed to the Industrial Appeals Board, claiming the code authority did not have full information when the rates were fixed and asking the board to approve a new schedule. The board heard the appeal on October 2. The board has since refused to pass at this time on the new evidence submitted by the Nevin Transit Company but recommended that such evidence be considered at a public hearing at which all interested parties could appear. Pending a decision to be made on the facts brought out at the hearing, present approved schedules are to remain effective. In remanding the case for further hearing the board reserved to the company the right to appeal to the board from any action taken as a result of the hearing.

Chicago Car Foremen Hold Annual Meeting

At the regular annual meeting of the Car Foremen's Association of Chicago, held Monday evening, October 8, at the La Salle hotel, Chicago, committee reports covering the activities of the association during the past year were presented and showed a healthy condition as regard both finances and membership. The meeting was presided over by President F. L. Kartheiser, mechanical inspector, Chicago, Burlington & Quincy, who reported 800 membership renewals and the addition of 1,400 new members during the past year, bringing the present membership of the association up to 2,604 as of September 30.

Immediately after the business session, the following officers were elected for the ensuing year: President, E. U. Mazurette, car foreman, Grand Trunk Western; first vice-president, C. O. Young, chief clerk to superintendent of car department, Illinois Central; second vice-president, J. S. Acworth, supervisor of equipment, General American Car Company; C. J. Nelson, superintendent of interchange, The Chicago Car Interchange Bureau, and G. K. Oliver, assistant passenger car foreman, Baltimore & Ohio Chicago Terminal, were re-elected treasurer and secretary, respectively.

R.F.C. Plans More Railroad Loans

On the ground that it would not be in the public interest to force railroad reorganizations at this time, Jesse H. Jones, chairman of the Reconstruction Finance Corporation, stated on October 8 after a conference with the President that the R.F.C. is prepared to continue to make loans to railroads not earning their fixed charges in cases where they can furnish collateral and the Interstate Commerce Commission makes the required finding that they are not in need of reorganization. Although the number of railroad loans made by the corporation had been much smaller during the earlier part of this year than last year and in 1932, it has recently authorized additional loans for the Chicago & North Western and the New York, New Haven & Hartford and several other applications are now pending. To September 20 the corporation had disbursed in railroad loans $413,896,530, of which $70,609,637 has been repaid, and Mr. Jones expressed the opinion that another $30,000,000 or so would take care of present needs. He also expressed the hope that something would be done to improve the railroad situation at the next session of Congress, that government ownership of railroads is the last thing that should be undertaken, and that competing forms of transportation should be regulated. He also suggested federal taxation of interstate motor vehicle transportation.

N.I.T. League Proposal for Truck Regulation

A 12-point program purporting to provide for the regulation of interstate truck traffic has been drafted by the Highway Transportation committee of the National Industrial Traffic League. Its recommendation, which has been approved by the Executive committee of that organization, will be presented for a vote of the membership of the league at its annual meeting to be held in New York on November 14-15. The committee does not recommend any specific bill but offers the 12 points as a basis for judgment. These points are:

1. If legislation should contemplate federal regulation of interstate trucking rates, such rates should be judged by the costs and conditions of highway transportation without reference to the level of the rates required to be charged by the costs and conditions of other types of transportation.
2. Whatever policy of truck regulation may be adopted by the federal government, it should be based on the maintenance and fostering of that type of transportation.
3. No attempt should be made arbitrarily to define the difference between contract and common truck carriers.
4. No regulation should apply to local transportation, even when between localities in different states.
5. Initial carriers should be made responsible for loss and damage to freight.
6. Operators in interstate traffic should be required to obtain certificates or permits.
7. Certificates or permits should not be revocable by any regulatory authority.
8. The regulatory body should have the power to suspend proposed interstate rate schedules and in such cases the burden of proof of the reasonableness of the rates should be on the parties filing them.
9. There should be uniform state legislation with reference to dimensions of truck loads and speeds of motor freight carriers.
10. Common carriers by truck should be required to carry liability, damage and cargo insurance.
11. Common carriers by truck should be regulated both with reference to maximum and minimum rates; contract carriers with reference to minimum rates only; and there should be no regulation whatever of vehicles operated by owners or corporations not for hire.
12. Any proposed regulation should carry a clause excepting common and contract interstate trucking companies already in operation.

Preliminary to whatever regulation might be adopted by Congress, the committee recommends that the present code authority of the trucking industry require the filing of interstate trucking rates and the making

of such rate files open to the public. It also recommends that such practice of rate filing as well as truck registrations under the code be studied and that their practice under the code be considered an "experience" period from which data, useful in formulating legislation, may be developed.

Supply Trade

William E. S. Dyer has been elected president of the **Edge Moor Iron Company,** Edge Moore, Del. Mr. Dyer has been actively engaged in the consulting engineering field for nearly 30 years.

The Equipment Specialties Company, Chicago, has taken over the sale of the Nystrom divided basket bunker for refrigerator cars and the Nystrom rakbrace, a refrigerator car floor rack holder.

The Timken Roller Bearing Company, Canton, Ohio, was awarded first place for the most effectively conceived and executed industrial advertising campaign of the year in the Tool and Equipment Division of the National Industrial Advertisers Association at the annual convention held in Cincinnati, Ohio, October 18, 19 and 20.

Daniel B. Worth, chief engineer of the **Whitcomb Locomotive Company,** Rochelle, Ill., has joined the engineering department of the **Baldwin Locomotive Works,** Philadelphia, Pa., where he will be identified with the engineering of Baldwin and Whitcomb electric and internal combustion locomotives. **Edward P. Hachtel,** Whitcomb production engineer, remains at Rochelle where he will be in charge of inspection and will provide engineering contact with the Whitcomb shops.

The Shepard Niles Crane & Hoist Corporation has now concentrated all its manufacturing divisions at Montour Falls, N. Y., the Niles plant at Philadelphia, Pa., having been closed and its equipment moved to Montour Falls. A new erecting shop designed for the manufacture of Niles heavy cranes has been built, and a plant at Montour Falls which adjoins the Shepard plant has been purchased and affords additional space required by the move of the Niles division. All of the engineering data, fixtures and tools formerly used by the General Electric Company in building the Shepard motor have been purchased, and Shepard motors and Niles motors are now being produced at Montour Falls. The Chemung Foundry, Elmira, N. Y., owned by the Shepard Niles Company and which produces all its iron castings, is now the only division not located at Montour Falls.

Stanton Hertz, general sales manager of the **Copperweld Steel Company,** Glassport, Pa., has been appointed vice-president and chief engineer of that company. Mr. Hertz was graduated from Alabama Polytechnic Institute in 1911. He served with the Westinghouse Electric & Manufacturing Company for several years and with the Electrical Engineering & Manufacturing Company. During the war Mr. Hertz served overseas as first lieutenant, 56th Engineers regiment. For the past 14 years he has been with the Copperweld Steel Company, starting as electrical engineer, and in 1927 he was appointed general sales manager.

Stanton Hertz

A. F. Stuebing has been appointed railroad mechanical engineer of the commercial office of the **United States Steel Corporation,** with headquarters at 71 Broadway, New York. Mr. Stuebing was born in Lewiston, Me., May 24, 1889, and received his education at Cornell University and the University of Illinois. He entered railway service in 1911 with the Boston & Albany, following which he was with the Pennsylvania, with the Chicago, Rock Island & Pacific and with the Simmons-Boardman Publishing Company, as associate editor of the *Railway Age* and managing editor of the Railway Mechanical Engineer. From 1923 to 1932 he was chief engineer of the Bradford Draft Gear Company and its successor, the Bradford Corporation, and since has been chief engineer of the Par Car Corporation. He is a member of the American Society of Mechanical Engineers and a past chairman of its Railroad Division. Mr. Stuebing has been a frequent contributor to technical periodicals, and has presented numerous papers before engineering societies and railway organizations.

A. F. Stuebing

OBITUARY

James W. Rawle, vice-president of The J. G. Brill Company, Philadelphia, Pa., died at his home in Lansdowne, Pa., on October 4, after a long illness. Mr. Rawle was born at Williamsport, Pa., on September 6, 1869, where he received his early education. His first employment was with the Bethlehem Steel Company, with which company he was associated for 17 years, having entered their employ in 1889 as a day laborer and working up through the various departments to the position of assistant to the president. In 1906 he entered the employ of The J. G. Brill Company as assistant general manager. In 1914 he was appointed second vice-president and general manager, and in 1926 he was elected vice-president. In addition to being a director of The J. G. Brill Company and its subsidiary companies, he was a director of The Brill Corporation, the American Car & Foundry Motors Company and The Electric Railway Equipment Securities Corporation. He was actively associated with the Pennsylvania Manufacturers' Association as a member of its executive committee, and he was also a director of the association's affiliated companies. During the years 1930 and 1931 he served as president of that association.

Equipment and Supplies

FREIGHT CARS

THE LEHIGH NAVIGATION COAL COMPANY is inquiring for three air dump cars of 30 cu. yd. capacity.

IRON AND STEEL

THE DELAWARE & HUDSON is inquiring for 182 tons of steel for grade crossing elimination work at Windsor, N. Y.

THE CHESAPEAKE & OHIO has ordered 250 tons of sheet piling for its ore dock at Toledo, Ohio, from the Empire Construction Company, and 800 tons of structural steel for its car dumper at this point from the Industrial Brownhoist Corporation.

LEHIGH VALLEY.—This company is asking for bids on 300 tons of steel for a bridge to be built at South Plainfield, N. J. The company is also asking for 140 tons of steel for a bridge over its tracks at Picton Depot, Clark Township, Union County, N. J.

MISCELLANEOUS

BOSTON & MAINE.—The Valve Pilot Corporation, New York, has received an order from the Baldwin Locomotive Works for five locomotive valve pilots to be applied to engines which it is building for the Boston & Maine.

Financial

BANGOR & AROOSTOOK.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue $2,000,000 of consolidated refunding mortgage 4 per cent bonds and to issue and exchange for outstanding 5 per cent bonds $3,176,000 of the consolidated mortgage bonds convertible into common stock. The company also asked authority to issue 98,344 shares of common stock for conversion.

CHESAPEAKE & OHIO.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon a branch line extending from Garrison, Ky., to Carter, 19.7 miles.

CHICAGO & NORTH WESTERN.—*R. F. C. Loan.*—This company has applied to the Reconstruction Finance Corporation for an additional loan of $7,415,000 for two years to meet tax payments, audited vouchers, and Wisconsin highway payments due in the last quarter of 1934, offering as security collateral now pledged with the R. F. C. and also $13,500,000 of first and refunding mortgage bonds.

CHICAGO & NORTH WESTERN.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue and pledge $4,428,000 of first and refunding mortgage 5 per cent bonds and to issue and sell or exchange $2,214,000 of general mortgage 4½ per cent bonds or interest-bearing interim certificates in lieu of any part of that amount in connection with the refinancing of underlying mortgage bonds maturing January 1.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Abandonment.*—Examiner C. P. Howard of the Interstate Commerce Commission has recommended in a proposed report that the commission authorize the abandonment of a branch line from Babcock, Wis., to Norway, 15.84 miles.

DELAWARE & HUDSON.—*Notes.*—This company has applied to the Interstate Commerce Commission for authority to issue from time to time $16,000,000 of short-term 6 per cent notes for various purposes, including renewal of $11,475,723 of notes outstanding.

DENVER & SALT LAKE WESTERN.—*R. F. C. Loan.*—This company, whose stock is owned by the Denver & Rio Grande Western, has applied to the Reconstruction Finance Corporation for a three-year loan of $3,182,150 for the purpose of purchasing at $155 a share 20,530 shares of the capital stock or voting trust certificates of the Denver & Salt Lake tendered or to be tendered to the D. & R. G. W., by minority stockholders for purchase under orders issued by the Interstate Commerce Commission when it authorized the company to acquire control of the Denver & Salt Lake.

LEHIGH VALLEY.—*R. F. C. Loan.*—This company has applied to the Reconstruction Finance Corporation for a loan of $5,000,000 for the purpose of paying in part taxes, interest and other obligations due on or before May 1.

LITCHFIELD & MADISON.—*R. F. C. Loan.*—This company has applied to the Reconstruction Finance Corporation for a loan of $883,575 to provide funds to apply toward the payment of the principal of 5 per cent first mortgage bonds maturing November 1.

LOUISVILLE & NASHVILLE.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Hematite, Tenn., to Pond, 31 miles, and a 6-mile spur.

NEW YORK, CHICAGO & ST. LOUIS.—*Toledo Terminal and Detroit & Toledo Shore Line Securities.*—The Interstate Commerce Commission has authorized this company to assume liability as guarantor for $137,000 of first mortgage 4½ per cent bonds of the Toledo Terminal and $416,000 of first mortgage 4 per cent bonds of the Detroit & Toledo Shore Line. The bonds are owned by the Nickel Plate and are pledged as collateral. The Nickel Plate proposes to withdraw them from pledge, guarantee them and sell them, paying the proceeds to the trustee of its refunding mortgage.

PRESCOTT & NORTHWESTERN.—*Bonds.*—The Interstate Commerce Commission has authorized this company to extend for two years the maturity date of $75,000 of its first mortgage 6 per cent bonds owned by the Missouri Pacific and pledged by it as collateral with the Reconstruction Finance Corporation—both of which have consented to the extension.

SEABOARD AIR LINE.—*Equipment Trust Certificates.*—The Interstate Commerce Commission has authorized this company to assume liability for $1,700,000 of Class A and $420,000 of Class B equipment trust 4½ per cent certificates, Series EE. The Class A certificates will mature in installments from 1935 to 1944, and the Class B certificates from 1936 to 1945. The issue is to be sold to the Prudential Life Insurance Company at par.

SIERRA.—*Abandonment.*—The receiver has applied to the Interstate Commerce Commission for authority to abandon a branch line from Jamestown, Calif., to Angels, 19.05 miles.

UNITED RAILWAYS (OREGON).—*Valuation.*—The Interstate Commerce Commission has issued a final valuation report as of 1927 finding the final value for rate-making purposes to be $4,250,000.

Average Prices of Stocks and of Bonds

	Oct. 9	Last week	Last year
Average price of 20 representative railway stocks..	34.74	34.71	40.74
Average price of 20 representative railway bonds..	73.26	72.56	68.30

Dividends Declared

Kansas City, St. Louis & Chicago.—6 Per cent Guaranteed Preferred, $1.50, quarterly, payable November 1 to holders of record October 20.

Lehigh & Hudson River.—$1.00, quarterly, payable September 29 to holders of record September 25.

Northern R. R. of New Hampshire.—$1.50, quarterly, payable October 31.

Piedmont & Northern.—75c, quarterly, payable October 10 to holders of record September 29.

Construction

CANADIAN NATIONAL.—Bids will be received by this road until 12 oclock noon October 15, at Toronto, Ont., for the construction of a new passenger concourse, etc., at London.

CHESAPEAKE & OHIO.—Contracts have been awarded for the construction of a new car dumper and incidental work at Presque Isle (Toledo), Ohio, involving a total estimated expenditure of $1,550,000. The contract for the construction of the car dumper has been awarded to the Industrial Brownhoist Corporation, Bay City, Mich., while a contract for grading and the construction of dock walls and concrete foundations for the dumper and other buildings has been let to the Empire Construction Company, Baltimore, Md. The Edward E. Gillen Company, Milwaukee, Wis., has the contract for constructing a new channel in connection with the dumper, which will involve the dredging of 380,000 cu. yd. of material. The track work, involving approximately 10 miles of track, will be done by the railway's forces. The C. & O. has also awarded a contract to the Railroad Water & Coal Handling Co., Chicago, for the construction of a water treating plant at Carey, Ohio, at a cost of about $35,000.

ERIE.—The New York Public Service Commission has designated for elimination the North avenue, Paige street, McMaster street, East Temple street and Green street crossings of this road in the village of Owego, Tioga county, N. Y. The North avenue crossing is to be eliminated by depressing the street and carrying it under the railroad at the location of the present crossing, at an estimated cost of $148,900. The Green street crossing is to be closed and traffic diverted over existing streets. The Paige street crossing is to be closed to vehicular traffic and a pedestrian subway constructed at an estimated cost of $10,200. The crossings at McMaster street and East Temple street will be closed and traffic diverted from these streets to the undercrossing to be constructed at North avenue and the pedestrian subway to be constructed at Paige street.

PENNSYLVANIA.—Revised plans and an estimate of additional cost of $31,000 in connection with the elimination of grade crossings at Wilson road or Lapham road, in the town of Aurora and the Girard avenue, Main street, Oakwood avenue, Persons street and Olean street crossings of the Pennsylvania in the village of East Aurora, Erie county, N. Y., have been approved by the New York Public Service Commission.

PENNSYLVANIA.—The New Jersey Board of Public Utility Commissioners has ordered that work be started on December 1 of this year and finished by September, 1935, on the elimination of five grade crossings on the Woodbridge and Perth Amboy branches of the Pennsylvania in the Township of Woodbridge, county of Middlesex, N. J.

Railway Officers

EXECUTIVE

Herbert A. Greeniaus, chief clerk to the vice-president of the Canadian Pacific, has been appointed assistant to the vice-president and general manager, Eastern lines, with headquarters as before at Montreal. Mr. Greeniaus entered the service of the Canadian Pacific in April, 1911, as clerk in the general superintendent's

Herbert A. Greeniaus

office at Toronto. He was appointed secretary to the general superintendent in January, 1916, and became assistant chief clerk in the same office in October, 1916. In February, 1919, he was transferred to Montreal to become assistant chief clerk in the vice-president's office and in September, 1924, he was promoted to chief clerk to the vice-president, the position he has held for the past 10 years.

Horace Clyde Grout, whose appointment as assistant to the vice-president of the Canadian Pacific at Montreal was noted in the *Railway Age* of October 6, was born on March 14, 1881, at Wausau, Wis.

H. C. Grout

He was educated at Northwestern Military Academy and the University of Wisconsin. Mr. Grout entered railway service in 1898 with the Canadian Pacific as rodman in the construction department, later becoming instrumentman and resident engineer. From 1904 to 1910 he served as resident engineer with the maintenance of way department and assistant division engineer at Toronto. He served as assistant superintendent at Havelock, Ont., and Toronto, Ont., from April, 1910, until February, 1912. From the latter date until October, 1912, he served as superintendent successively at Toronto and Brownville Junction, Me., and in October, 1912, he became assistant general superintendent of the New Brunswick district at St. John, N. B., later becoming general superintendent of this district. He was appointed general superintendent of the Ontario district at Toronto, Ont., in April, 1920, and served in this capacity until his recent promotion.

TRAFFIC

Ralph H. Eberly, whose appointment as assistant freight traffic manager for the Seaboard Air Line at Norfolk, Va., was noted in the *Railway Age* of October 6, was born in Mechanicsburg, Pa. He received his education in the public schools of that city and at Gettysburg College, beginning his railroad career in 1897 as a stenographer in the local offices of the New York, Philadelphia & Norfolk (now part of the Pennsylvania). He later became a stenographer in the traffic department of the Seaboard Air Line and subsequently advanced to rate clerk. From 1904 to 1907 he was located at Birmingham, Ala., serving in the capacity of chief clerk to the assistant general freight agent at that point. In the latter part of 1907 he returned to Norfolk and became executive clerk in the general freight agent's office and thereafter occupied successively the positions of chief rate clerk, assistant chief clerk, chief clerk, assistant general freight agent and general freight agent.

Robert Thurlow Etheridge, whose appointment as assistant freight traffic manager of the commerce department of the Seaboard Air Line was noted in the *Railway Age* of October 6, was born on June 13, 1892, at Portsmouth, Va. After graduating from high school, Mr. Etheridge entered the service of the Seaboard Air Line in September, 1910, as runner in the office of the auditor of freight receipts and was transferred shortly thereafter to the office of the general freight agent. He served in numerous clerical capacities for seven years and in November, 1917, entered the U. S. Naval Reserve. Returning to the service of the Seaboard Air Line in February, 1919, Mr. Etheridge served in the traffic department at Norfolk, Va. From October, 1919, until April, 1924, he was engaged in other business and, on the latter date, returned to the Seaboard Air Line as assistant chief clerk to the first vice-president at Norfolk. In October, 1929, he became assistant general freight agent of the commerce department at Norfolk, which position he held until his recent promotion.

William Alexander Marshall, whose appointment as general freight agent for the Seaboard Air Line was noted in the *Railway Age* of October 6, was born in Macon, Ga., on May 25, 1891, and was educated in the public schools of Atlanta, Ga. He entered the service of the Southern in July, 1905, as a messenger, serving later as record clerk and billing clerk. In 1907 he became assistant rate clerk for the Nashville, Chattanooga & St. Louis at Atlanta. From 1910 to 1914 he served as quotation clerk and rate clerk in the general freight office of the Atlanta, Birmingham & Atlantic (now Atlanta, Birmingham & Coast) with headquarters at Atlanta. In 1914 Mr. Marshall became executive rate clerk for the Atlantic Coast Line at Wilmington, N. C. He entered the U. S. Army in May, 1917, received his honorable discharge with the rank of captain, and returned to the Atlantic Coast Line in 1919. From October, 1920, until August, 1926, he served consecutively as executive rate clerk, assistant chief clerk, and assistant general freight agent for the Norfolk Southern. His connection with the Seaboard began in August, 1926, as assistant general freight agent, which position he occupied until his present appointment.

OPERATING

J. O. Clendenen has been appointed trainmaster of the Radford division of the Norfolk & Western, with headquarters at Roanoke, Va., succeeding **J. W. Robinson,** who retired on May 1.

H. G. O'Leary, division engineer of the Lakehead division of the Canadian National, with headquarters at Ft. William, Ont., has been appointed acting superintendent of that division with the same headquarters, succeeding **R. S. Richardson,** superintendent, who has retired.

Norman M. McMillan, whose appointment as general superintendent for the Canadian Pacific at Toronto was noted in the *Railway Age* of October 6, entered the service of the Chicago, Rock Island & Pacific in 1909, and in 1911 he went with the Denver, Northwestern & Pacific. In August, 1912, he became ticket clerk in the passenger department of the Canadian Pacific at Toronto and was appointed stenographer in the general superintendent's

Norman M. McMillan

office at Toronto in the following year. In August, 1914, he became secretary to the assistant general manager in Montreal, in which office he was appointed chief clerk in December, 1918. In November,

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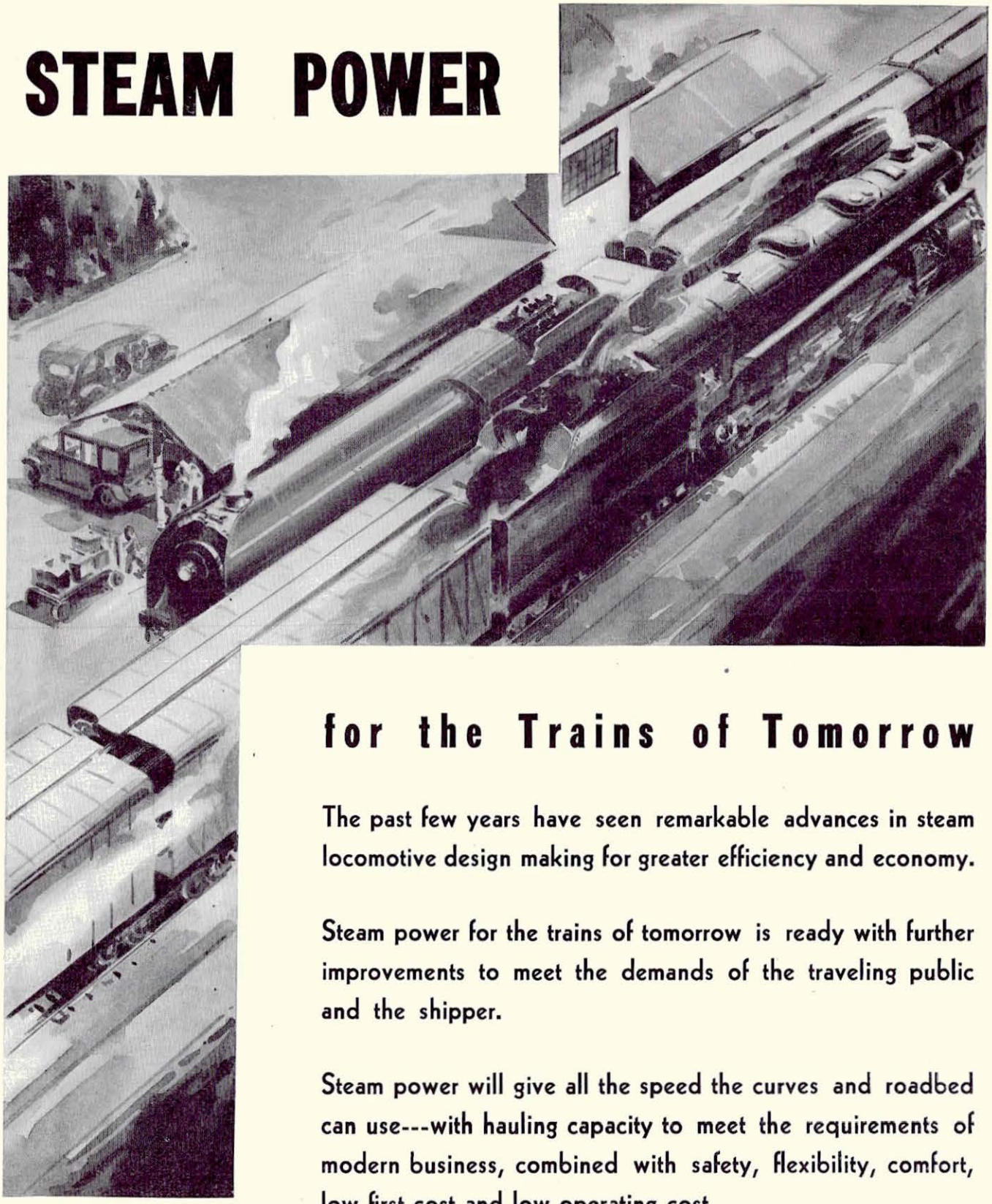
STEAM POWER



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LIMA OHIO

1921, he became assistant superintendent of the Trenton division at Toronto, rising to the position of superintendent in November, 1927. In November, 1932, he was transferred to the Bruce division and in July, 1933, was appointed assistant to the general manager of the Eastern lines in Montreal, and subsequently assistant to the vice-president and general manager of the Eastern lines.

ENGINEERING AND SIGNALING

E. E. Mayo, whose appointment as assistant chief engineer of the Southern Pacific, Pacific Lines, was noted in the *Railway Age* of October 6, has been connected with the Southern Pacific for more than 27 years. He was born on September 13, 1885, at Springfield, Mo., and received his technical training at the University of Oregon. He entered railway service in February, 1907, as a levelman on location for the Pacific Railroad & Navigation Company (now part of the Southern Pacific), later serving as a transitman and resident engineer on construction. When this company was taken over by the

E. E. Mayo

Southern Pacific in 1912, Mr. Mayo was appointed an assistant engineer on the latter road, being promoted to roadmaster on the Portland division in July, 1913. Seven years later Mr. Mayo was further advanced to assistant division engineer of the Salt Lake division, and in October, 1920, he was promoted to division engineer of the Portland division, being transferred to the Sacramento division in May, 1922. From November, 1923, to May, 1926, he served as assistant engineer in charge of second track construction in the Sierra Nevada mountains and from May to July of the latter year he was on special duty assisting engineering forces in the construction of new lines of the Southern Pacific of Mexico. Following the completion of this assignment he was appointed assistant engineer at San Francisco, which position he was holding at the time of his recent appointment.

Paul T. Robinson, who has been appointed engineer maintenance of way and structures of the Southern Pacific, Pacific Lines, as announced in the *Railway Age* of October 6, was born on February 12, 1882, at Hubbard, Iowa, and was educated at Rose Polytechnic Institute, Terre Haute, Ind. He entered railway service with the Union Pacific in June, 1900, serving as an axman, rodman, instrumentman and draftsman until July, 1905, when he was assistant engineer on construction, serving in this capacity until December, 1906, when he was appointed chief draftsman. Mr. Robinson entered the service of the Southern Pacific in January, 1908, serving as office engi-

Paul T. Robinson

neer and assistant engineer on the Sacramento division until January, 1912, when he was made a roadmaster on the same divsion. In September, 1913, he was transferred to the Stockton division as assistant division engineer. From March to December, 1917, Mr. Robinson served as engineer for the assistant general manager at Los Angeles, Cal., then being appointed special engineer in the general manager's office at the same point. In May, 1918, he was appointed assistant division engineer of the Los Angeles division and during federal control of the railroads he served as division engineer of the San Joaquin division. At the end of this period Mr. Robinson was appointed assistant division engineer of the Western division, being promoted to division engineer of the East Bay Electric division, with headquarters at Oakland, Cal., in January, 1922. In November, 1923, he was advanced to division engineer of the Tucson division, which position he was holding at the time of his recent appointment.

PURCHASES AND STORES

J. A. De Wolfe, assistant stationery purchasing agent on the Canadian Pacific at Winnipeg, Man., has been promoted to assistant purchasing agent with the same headquarters, succeeding **J. Arnott,** who has been transferred to Vancouver, B. C., succeeding **Frank Cooper,** who has retired.

MECHANICAL

H. H. Hummel, assistant to the general superintendent of motive power of the Southern Pacific, Pacific Lines, with headquarters at San Francisco, Cal., retired on September 1 because of ill health after 44 years of service with this company. The position of assistant to the general superintendent of motive power has been abolished. Mr. Hummel entered the service of the company in 1890 and served for many years as chief clerk under three general superintendents of motive power. He had been assistant to the general superintendent of motive power since 1927.

OBITUARY

Everett Monroe Harter, president and general manager of the Dansville & Mount Morris, died on October 5 at his home in Dansville, N. Y. He was 67 years old.

Frederick M. Dudley, general attorney of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Seattle, Wash., died in that city on October 9 following a heart attack.

Arthur J. Grymes, Sr., who resigned as manager of the lighterage and foreign freight departments of the Erie in May, 1913, died on October 7 of a heart attack at his home in East Orange, N. J. Mr. Grymes was 68 years old.

Willard A. Lalor, former general passenger agent of the Missouri district of the Chicago, Burlington & Quincy, died on October 9 in the Presbyterian Hospital, Chicago, Ill., after an illness of several weeks. Mr. Lalor retired in 1923.

John Kirkpatrick Graves, assistant vice-president of the New York Central, died suddenly on October 4 of a heart attack, at the age of 52. He was born at Lexington, Va., on October 16, 1881, and was educated at Washington and Lee University (A.B. degree, 1901) and the University of Virginia (B.L. degree, 1904). He entered the service of the Southern as assistant to general counsel at Washington, D. C., after which he became, in turn,

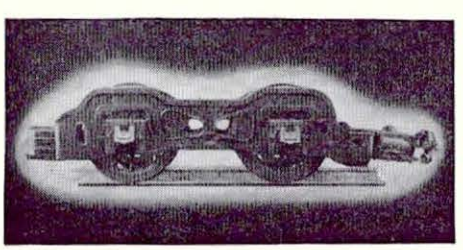
John Kirkpatrick Graves

solicitor and general attorney for the same company. From September, 1918, to March, 1920, he was counsel for the New York Central Lines at New York. From 1920 until 1923 he served as assistant to the vice-president and in 1923 became assistant vice-president of that road. Mr. Graves was director of various corporations affiliated with the N. Y. C. including the Securities Corporation of the New York Central, Merchants Despatch, Inc., and the Clearfield Bituminous Coal Corporation.

Tables of Revenues and Expenses of Railways begin on next left-hand page

FAST SCHEDULE To *Meet* Competition

Seconds saved or lost in getting the train to road speed after each stop are more important today than ever in railroad history. • Easy starts are important in building a reputation for comfortable travel. • The Locomotive Booster performs a valuable service on both counts. • It is of inestimable value in quick acceleration to road speed. • It avoids jerks in starting the train. • Booster equipped power is one of the most economical and surest means of maintaining satisfactory passenger train schedules.



Booster repair parts made by the jigs and fixtures that produced the original are your best guarantee of satisfactory performance.

FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK CHICAGO MONTREAL

Revenues and Expenses of Railways

For Month of August and Eight Months of Calendar Year 1934

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	General	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income	Net ry. operating income, 1933
Akron, Canton & Youngstown	Aug.	171	$119,404	$39	$126,293	$26,799	$18,268	$7,327	$43,745	$10,574	$106,622	84.4	$19,671	$9,994	—$4,002	$44,315
	8 mos.	171	1,104,486	287	1,178,181	161,866	121,242	60,456	354,019	64,912	762,058	64.7	416,123	331,414	208,626	227,620
Alton	Aug.	949	962,745	208,203	1,306,571	255,141	201,407	46,060	455,057	38,581	1,006,622	77.0	299,949	227,362	68,532	270,291
	8 mos.	950	6,393,800	1,122,679	8,717,902	1,255,875	1,331,109	364,654	3,411,377	339,238	6,784,952	77.8	1,932,950	1,354,460	236,111	1,036,849
Atchison, Topeka & Santa Fe	Aug.	9,532	8,049,976	1,073,714	9,941,713	1,101,394	2,382,979	302,645	3,183,660	511,390	7,487,212	75.3	2,454,501	1,744,729	1,884,894	1,563,832
	8 mos.	9,541	57,427,038	7,474,808	71,031,202	8,874,123	17,089,428	2,435,388	23,863,848	3,073,111	55,351,513	77.9	15,679,689	9,273,302	10,139,845	5,926,658
Gulf, Colorado & Santa Fe	Aug.	1,918	904,865	65,388	1,044,128	155,053	170,974	40,827	408,053	81,762	856,486	82.0	187,642	105,240	46,156	—34,435
	8 mos.	1,918	6,867,547	378,833	7,842,122	1,544,340	1,873,657	374,953	3,023,183	521,866	7,336,555	93.6	505,567	—156,062	—751,617	—598,827
Panhandle & Santa Fe	Aug.	1,878	671,294	30,070	749,038	87,367	101,333	14,900	231,045	42,468	477,049	63.7	271,989	226,390	160,317	116,251
	8 mos.	1,878	5,334,224	199,889	5,909,968	693,391	1,157,364	135,370	1,674,024	263,127	3,922,536	66.4	1,987,432	1,630,830	1,055,437	565,833
Atlanta & West Point	Aug.	93	84,589	19,143	121,073	19,923	23,254	6,301	50,755	8,520	111,171	91.8	9,902	2,688	—10,235	—17,627
	8 mos.	93	647,370	135,818	932,996	157,265	212,913	53,586	393,497	61,571	896,439	96.1	36,557	—21,183	—110,476	—139,812
Western of Alabama	Aug.	133	68,869	18,832	98,546	18,037	26,801	6,532	44,388	6,794	104,359	105.9	—5,813	—13,811	—7,073	—13,984
	8 mos.	133	599,053	139,163	844,010	160,128	249,321	54,332	353,376	56,581	887,556	105.2	—43,546	—107,598	—61,312	—42,131
Atlanta, Birmingham & Coast	Aug.	639	208,034	10,380	245,609	43,502	45,376	20,780	101,881	21,154	242,691	98.8	2,918	—9,714	—16,267	—14,407
	8 mos.	639	1,666,016	52,299	1,944,828	326,289	408,004	170,054	796,256	131,735	1,909,509	98.2	35,319	—65,116	—160,974	—143,007
Atlantic Coast Line	Aug.	5,145	1,940,187	237,914	2,431,336	421,348	614,022	104,676	1,119,427	123,840	2,394,688	98.5	36,648	—116,340	—46,895	17,051
	8 mos.	5,145	20,880,328	3,758,497	27,746,009	3,427,634	5,311,000	903,981	10,099,887	1,027,073	21,020,718	75.8	6,725,291	3,669,406	3,014,321	3,397,835
Charleston & Western Carolina	Aug.	342	134,608	1,891	140,379	23,547	24,063	5,674	53,078	5,187	111,549	79.5	28,830	10,830	10,221	27,948
	8 mos.	342	1,300,453	10,448	1,345,258	187,623	199,265	45,291	432,293	38,115	902,587	67.1	442,671	306,546	284,084	327,578
Baltimore & Ohio	Aug.	6,386	9,474,446	1,004,098	11,307,039	1,079,231	1,975,770	379,505	3,960,303	561,470	8,072,046	71.4	3,234,993	2,595,157	2,149,457	4,029,145
	8 mos.	6,384	79,850,573	6,816,725	92,666,507	8,359,657	20,084,782	2,856,873	31,982,390	4,487,024	68,544,196	74.0	24,122,311	18,729,667	15,891,318	19,300,418
Staten Island Rapid Transit	Aug.	23	50,229	84,806	144,953	16,992	13,465	1,710	81,691	13,152	127,010	87.6	17,943	1,293	—14,946	14,537
	8 mos.	23	421,587	670,610	1,157,472	93,469	104,484	13,831	651,746	103,305	966,835	83.5	190,637	65,180	—70,699	26,461
Bangor & Aroostook	Aug.	603	204,585	14,273	238,696	81,765	85,789	4,911	83,437	29,206	286,436	120.0	—47,740	—57,991	—42,936	—65,632
	8 mos.	603	3,745,480	210,313	4,116,072	770,037	708,987	38,708	971,314	190,163	2,686,344	65.3	1,429,728	1,091,382	1,077,934	1,147,242
Bessemer & Lake Erie	Aug.	225	959,895	497	966,066	230,452	257,117	11,138	164,739	47,326	710,727	73.6	255,339	209,417	205,713	541,275
	8 mos.	225	5,731,673	5,905	5,804,196	887,636	2,239,669	88,067	1,137,664	283,013	4,634,573	79.8	1,169,623	942,158	1,026,145	1,208,238
Boston & Maine	Aug.	2,038	2,213,450	613,866	3,327,136	489,236	420,294	67,719	1,344,216	162,589	2,494,047	75.0	833,089	618,422	500,328	769,710
	8 mos.	2,051	19,690,001	4,650,489	28,388,427	4,170,967	4,411,136	476,282	11,384,909	1,353,911	21,875,168	77.1	6,513,259	4,915,594	3,595,928	4,784,503
Bklyn East. Dist. Term	Aug.	11.27	74,125	.....	75,909	4,872	11,324	195	26,055	5,949	48,395	...	27,514	20,917	20,917	33,643
	8 mos.	11.27	618,045	.....	634,597	35,281	66,714	2,783	208,905	40,467	354,150	...	280,447	228,190	228,190	231,859
Burlington-Rock Island	Aug.	280	52,792	4,795	62,098	17,549	16,987	4,335	40,476	8,932	88,279	142.2	—26,181	—30,999	—39,518	—18,513
	8 mos.	280	456,649	17,993	508,286	96,832	106,078	30,569	297,609	59,314	590,398	116.2	—82,112	—121,224	—187,315	—92,957
Cambria & Indiana	Aug.	37	89,726	.....	90,004	8,568	39,471	369	12,926	6,683	68,017	75.57	21,987	7,533	66,470	99,392
	8 mos.	37	688,404	.....	690,059	60,097	316,451	3,092	92,933	54,599	527,172	76.40	162,887	49,696	563,819	635,593
Canadian Pac. Lines in Maine	Aug.	233	71,114	22,515	113,183	23,320	22,057	8,920	49,182	5,824	110,087	97.3	3,096	—2,904	—16,537	—46,822
	8 mos.	233	1,210,234	133,593	1,453,567	285,957	253,129	70,389	551,705	48,203	1,214,691	83.6	238,876	186,934	14,559	—81,655
Canadian Pac. Lines in Vermont	Aug.	85	47,762	13,117	76,677	23,102	18,417	3,965	48,976	3,987	98,780	128.8	—22,103	—27,203	—41,466	—19,694
	8 mos.	85	437,164	84,133	640,559	127,135	162,469	31,390	425,375	32,535	781,293	121.9	—140,734	—181,549	—313,013	—277,027
Central of Georgia	Aug.	1,926	897,169	103,351	1,099,958	119,613	203,986	50,178	439,434	90,467	907,038	82.5	192,920	122,184	93,178	108,520
	8 mos.	1,926	7,136,796	778,301	8,939,871	1,084,297	2,026,597	388,930	3,554,013	575,817	7,669,665	85.8	1,270,206	684,947	566,798	406,730
Central New Jersey	Aug.	689	1,678,429	518,355	2,356,097	144,651	389,650	52,947	981,659	132,356	1,716,585	72.9	639,512	131,971	55,422	275,177
	8 mos.	689	15,200,597	3,090,613	19,527,281	1,150,760	3,698,501	356,515	7,809,253	749,453	13,883,298	71.1	5,643,983	3,091,766	2,310,617	1,672,467
Central Vermont	Aug.	455	338,883	54,663	434,895	66,033	79,792	13,650	196,213	27,401	383,033	88.0	51,862	35,973	27,666	81,826
	8 mos.	455	2,746,201	312,548	3,383,088	625,488	713,593	105,084	1,570,189	169,014	3,183,654	94.1	199,434	71,287	—6,624	175,974
Chesapeake & Ohio	Aug.	3,143	8,341,521	249,187	9,036,299	1,033,399	1,505,939	168,999	2,070,485	281,936	5,071,555	56.1	3,964,744	3,110,084	2,970,626	4,095,347
	8 mos.	3,132	68,384,184	1,895,310	73,007,307	7,674,677	13,581,849	1,323,839	16,113,543	2,243,407	41,026,408	56.2	31,980,899	25,036,744	24,084,740	22,845,295
Chicago & Eastern Illinois	Aug.	938	846,106	161,181	1,136,327	139,647	142,976	49,345	425,669	77,038	843,618	74.2	292,709	242,426	110,036	133,151
	8 mos.	938	6,657,076	774,123	8,419,624	1,039,938	1,335,709	399,316	3,385,827	464,204	6,661,806	79.1	1,757,818	1,243,522	263,101	—107,228
Chicago & Illinois Midland	Aug.	131	257,370	1,317	267,014	36,090	57,804	14,641	67,448	18,577	194,560	72.9	72,454	65,151	77,573	88,731
	8 mos.	131	1,799,174	8,131	1,868,656	226,319	396,580	122,600	496,076	130,247	1,371,825	73.4	496,831	487,384	475,969	622,817
Chicago & Northwestern	Aug.	8,442	5,703,866	960,896	7,403,148	936,809	1,236,989	210,773	2,605,348	401,410	5,423,033	73.3	1,980,115	1,478,608	1,205,389	1,607,400
	8 mos.	8,442	39,088,036	5,734,038	50,417,667	7,374,742	10,950,297	1,313,348	19,627,312	2,281,408	41,774,152	82.9	8,643,515	4,304,848	2,676,538	2,968,143
Chicago, Burlington & Quincy	Aug.	9,174	5,868,277	806,413	7,435,226	893,238	1,092,378	198,900	2,495,219	411,968	5,160,623	69.4	2,274,603	1,888,881	1,546,545	1,597,670
	8 mos.	9,181	41,908,670	4,337,098	51,868,645	6,622,099	8,342,543	1,732,141	18,612,138	2,411,981	38,101,526	73.5	13,767,119	9,392,032	7,051,917	7,077,316
Chicago Great Western	Aug.	1,518	1,388,512	53,133	1,582,612	193,708	195,058	51,146	526,815	70,944	1,034,673	65.4	547,939	491,547	289,265	195,726
	8 mos.	1,518	8,956,305	337,147	9,997,268	1,294,865	1,515,924	408,818	3,818,939	399,643	7,428,747	74.3	2,568,521	2,122,096	649,432	479,706
Chicago, Ind. & Louisville	Aug.	644	507,674	60,193	647,562	66,163	141,279	26,075	265,830	36,244	541,209	83.6	106,353	58,189	—35,960	28,376
	8 mos.	644	3,918,893	368,172	4,883,465	439,914	1,145,495	200,033	2,056,017	202,558	4,088,454	83.7	795,011	421,334	—334,505	—154,705

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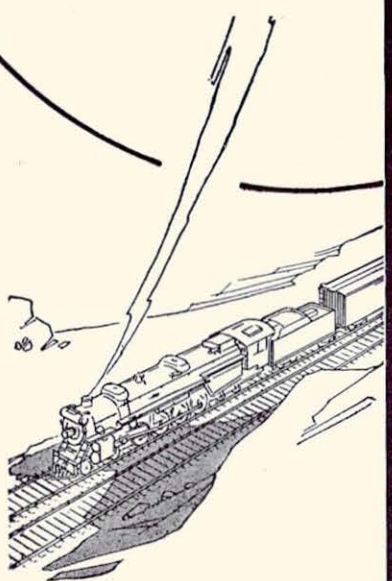
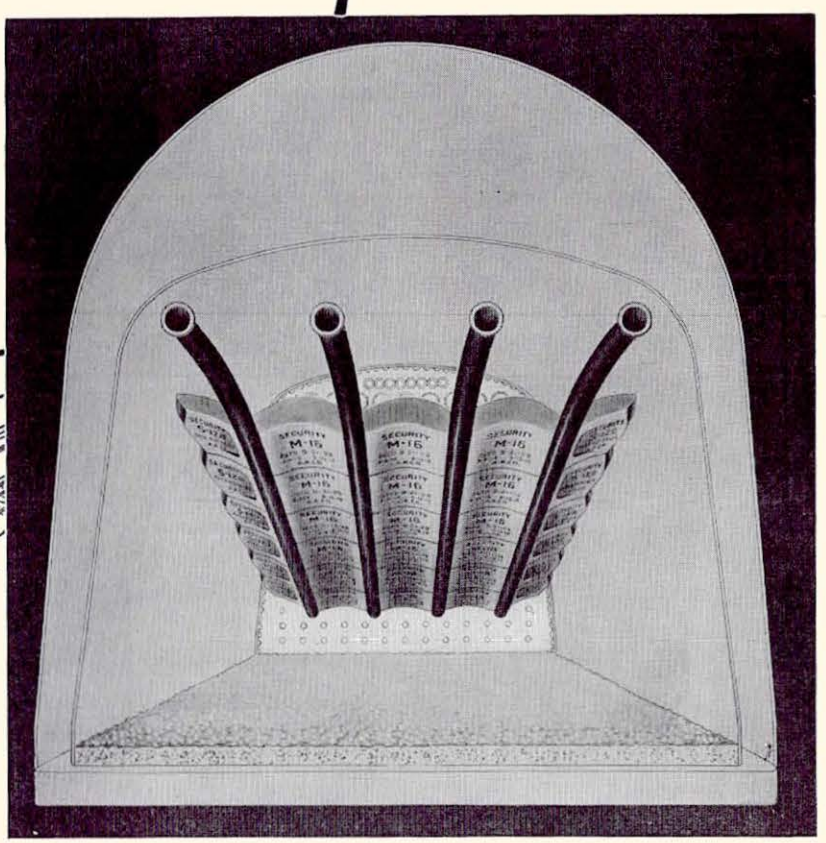
SECURITY BRICK ARCH PERFORMANCE

Reflects the Engineering Behind It!





On all the railroads of this country the Sectional type brick arch is the recognized standard.

A quarter of a century ago the Sectional Brick Arch, small brick supported on arch tubes, was introduced by the American Arch Company.

During this period, the era of the locomotives greatest development in both size and efficiency, American Arch Company engineers have had a major part in all problems relating to combustion.

This cumulative experience of American Arch Company engineers is always at the service of the railroads. It is one of the many distinguished characteristics that have given the American Arch Company its commanding position as Brick Arch and Combustion Specialists.

HARBISON-WALKER REFRACTORIES CO.

Refractory Specialists

NRA MEMBER U.S. WE DO OUR PART

AMERICAN ARCH CO.
INCORPORATED

Locomotive Combustion Specialists » »

Revenues and Expenses of Railways

FOR MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1934—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	General	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income	Net ry. operating income, 1933
Chicago, Mil., St. Paul & Pacific	Aug.	11,162	$7,359,096	$627,986	$8,782,594	$1,639,316	$1,513,969	$227,954	$2,939,207	$419,813	$6,779,790	77.2	$2,002,804	$1,491,610	$1,004,449	$1,194,117
	8 mos.	11,173	48,034,480	3,518,863	57,318,557	8,011,747	11,583,128	1,629,015	21,801,910	2,185,107	45,425,556	79.3	11,893,001	7,337,016	3,907,616	5,479,838
Chicago, Rock Island & Pacific	Aug.	7,593	4,943,446	547,576	6,022,503	681,476	1,267,128	183,141	2,304,985	383,550	4,887,419	81.2	1,135,084	750,174	464,433	161,073
	8 mos.	7,605	34,577,628	3,644,774	42,433,698	4,443,648	10,083,459	1,430,123	17,132,299	2,310,425	35,877,876	84.6	6,555,822	3,263,573	1,025,855	2,373,478
Chicago, Rock Island & Gulf	Aug.	721	295,450	21,827	323,080	47,433	27,816	15,968	116,553	25,435	235,546	72.9	87,534	70,379	15,859	—97,889
	8 mos.	721	2,247,619	155,504	2,442,104	326,942	299,569	125,718	894,482	154,840	1,821,498	74.6	620,606	452,466	—7,571	—236,295
Chic., St. Paul, Minn. & Omaha	Aug.	1,663	1,252,000	152,264	1,509,334	151,000	197,147	33,342	618,519	95,579	1,106,571	73.3	402,763	325,208	254,411	346,089
	8 mos.	1,663	8,037,248	890,235	9,684,686	1,046,364	1,564,724	257,519	4,466,395	558,567	7,963,418	82.2	1,721,268	1,121,020	560,620	957,907
Clinchfield R. R.	Aug.	309	367,414	4,265	376,445	35,752	85,898	15,498	90,358	13,843	241,349	64.1	135,096	90,097	109,944	193,133
	8 mos.	309	3,498,460	26,464	3,565,990	317,404	796,803	124,728	659,103	107,101	2,005,139	56.2	1,560,851	1,230,783	1,443,626	1,141,291
Colorado & Southern	Aug.	1,023	450,534	46,129	546,227	52,453	106,453	11,103	192,018	40,786	404,434	74.0	141,793	88,651	62,706	50,770
	8 mos.	1,028	2,938,966	206,956	3,502,240	554,252	737,409	92,294	1,339,306	262,787	2,991,500	85.4	510,740	61,696	—73,065	—191,914
Ft. Worth & Denver City	Aug.	804	330,429	45,258	432,084	41,903	64,833	16,112	155,897	39,100	320,548	74.2	111,536	81,844	43,093	78,343
	8 mos.	804	3,162,153	276,975	3,895,379	280,463	539,623	129,551	1,144,178	261,110	2,369,112	60.8	1,526,267	1,285,033	1,036,732	805,110
Columbus & Greenville	Aug.	167	56,694	6,429	68,099	13,280	13,108	3,979	28,918	8,805	68,090	100.0	9	—3,295	117	10,600
	8 mos.	167	449,492	43,210	533,916	108,988	87,945	28,970	237,067	70,655	533,615	99.9	301	—21,479	—9,126	41,559
Delaware & Hudson	Aug.	848	1,490,048	140,027	1,737,424	297,253	563,263	49,023	701,338	174,171	1,799,804	103.6	—62,380	—134,348	—128,792	394,951
	8 mos.	848	14,210,205	770,516	15,812,955	2,275,511	4,254,468	388,691	6,100,604	1,112,095	14,182,266	89.7	1,630,689	1,063,189	1,165,138	—81,390
Delaware, Lackawanna & Western	Aug.	992	2,549,192	571,247	3,585,205	450,510	679,153	112,193	1,573,037	150,905	2,985,032	83.3	600,173	249,141	227,709	555,015
	8 mos.	992	22,208,886	4,387,959	30,267,673	2,608,287	5,975,517	869,220	13,180,291	1,223,438	24,034,986	79.4	6,232,687	3,425,165	3,230,961	2,056,436
Denver & Rio Grande Western	Aug.	2,636	1,710,145	124,321	1,941,961	255,059	417,069	46,473	642,844	114,665	1,486,956	76.6	455,005	304,954	229,617	380,282
	8 mos.	2,522	10,243,158	601,638	11,559,322	1,353,242	2,810,980	361,214	3,811,552	658,825	9,043,226	78.2	2,516,096	1,313,733	1,195,110	1,158,615
Denver & Salt Lake	Aug.	232	96,184	4,617	110,155	13,781	23,166	1,502	25,442	14,947	74,536	67.7	35,619	22,619	67,333	67,008
	8 mos.	232	663,187	28,870	768,004	95,672	165,507	12,476	180,468	91,390	540,319	70.4	227,685	118,647	241,891	296,171
Detroit & Mackinac	Aug.	242	51,969	3,453	61,712	9,076	8,964	869	20,705	4,347	43,958	71.2	17,754	14,959	13,472	13,156
	8 mos.	242	318,972	22,898	388,128	79,018	62,351	6,894	166,016	28,483	342,714	88.3	45,414	73,232	62,822	6,121
Detroit & Toledo Shore Line	Aug.	50	179,499	.....	180,488	15,835	23,137	7,385	50,863	8,652	105,861	58.7	74,627	60,124	23,845	43,549
	8 mos.	50	2,039,162	.....	2,052,145	160,192	176,548	54,957	507,076	53,831	952,522	46.4	1,099,623	921,126	553,745	351,371
Detroit, Toledo & Ironton	Aug.	472	379,727	278	395,410	43,866	60,074	9,472	104,641	23,503	237,154	60.0	158,256	114,214	101,304	144,764
	8 mos.	472	4,062,078	2,157	4,194,185	369,496	557,103	78,614	931,462	144,392	2,051,866	48.9	2,142,319	1,708,257	1,515,166	669,233
Duluth, Missabe & Northern	Aug.	563	1,503,175	5,902	1,732,686	135,657	205,007	3,224	262,452	53,133	659,473	38.1	1,073,213	948,365	949,076	1,685,737
	8 mos.	563	5,908,452	25,190	6,857,767	1,042,811	1,743,931	26,047	1,496,268	324,013	4,633,018	67.6	2,224,749	1,554,786	1,560,128	1,856,739
Duluth, Winnipeg & Pacific	Aug.	178	63,708	3,362	70,667	29,750	8,533	1,953	36,556	6,095	82,870	117.3	—12,203	—15,640	—11,172	29,519
	8 mos.	178	525,081	21,285	568,492	156,083	141,023	15,256	272,637	41,424	626,268	110.2	—57,776	—87,249	—28,000	19,003
Elgin, Joliet & Eastern	Aug.	446	684,817	3	770,628	101,903	205,758	12,322	322,949	61,933	704,842	91.5	65,786	—15,558	—39,284	268,946
	8 mos.	446	6,517,770	9	7,253,780	759,123	1,784,607	99,168	2,730,214	370,248	5,743,105	79.2	1,510,675	856,339	536,910	587,690
Erie R. R. Inc. Chicago & Erie	Aug.	2,304	4,998,753	525,450	6,020,309	698,403	1,280,779	157,875	2,253,278	283,787	4,668,576	77.5	1,351,733	1,017,521	651,929	1,471,456
	8 mos.	2,313	43,494,188	3,516,619	50,975,432	4,739,638	10,282,337	1,280,241	17,974,342	2,235,523	36,563,145	71.5	14,412,287	11,732,448	9,085,333	7,927,455
New Jersey & New York	Aug.	45	12,199	48,367	62,362	6,490	23,283	1,182	46,493	3,439	80,887	129.7	—18,525	—22,687	—39,108	—31,778
	8 mos.	45	128,975	424,384	569,075	61,939	191,234	9,860	396,604	28,474	688,111	120.9	—119,036	—152,275	—281,737	—217,150
New Y., Susquehanna & Western	Aug.	215	215,997	26,227	255,382	52,465	58,355	4,319	110,735	11,820	237,692	93.1	17,690	—5,812	—23,563	42,401
	8 mos.	215	2,151,460	211,712	2,488,560	269,051	471,275	34,754	976,788	95,867	1,847,732	94.2	640,828	450,295	301,180	183,231
Florida East Coast	Aug.	812	202,251	54,661	282,660	109,286	122,636	19,071	142,508	46,773	443,346	156.8	—160,686	—198,046	—208,178	—264,858
	8 mos.	826	3,554,620	1,342,973	5,585,527	894,899	1,038,596	162,069	1,656,896	308,218	4,119,064	73.7	1,466,463	900,041	537,222	310,799
Fort Smith & Western	Aug.	249	56,258	1,220	60,828	14,448	9,103	5,421	19,348	4,101	52,567	86.4	8,261	6,261	35	—6,506
	8 mos.	249	387,915	8,364	426,264	112,431	77,094	41,094	146,901	32,115	404,895	95.0	21,369	8,141	—31,279	—37,574
Georgia R. R.	Aug.	329	232,503	17,053	269,590	28,680	49,429	15,932	120,659	12,397	227,704	84.5	41,886	36,607	41,807	51,730
	8 mos.	329	1,818,394	112,554	2,109,555	222,221	452,339	129,888	894,701	105,053	1,807,342	85.7	302,213	259,887	303,773	374,991
Georgia & Florida	Aug.	465	97,264	3,358	105,209	22,701	17,682	7,784	34,320	7,362	89,736	85.3	15,473	9,472	10,807	67,544
	8 mos.	465	674,606	18,637	733,317	173,588	143,283	60,915	278,063	46,328	702,733	95.8	30,584	—11,885	—30,302	6,623
Grand Trunk Western	Aug.	1,006	1,135,036	86,711	1,322,878	251,598	292,530	33,962	615,031	113,666	1,310,448	99.1	12,430	—53,982	—109,657	—28,212
	8 mos.	1,007	10,853,868	515,124	12,262,529	1,707,019	2,503,383	264,997	5,023,354	672,447	10,199,050	83.2	2,063,479	1,461,478	609,036	—486,206
Canadian Nat'l Lines in N. England	Aug.	172	88,570	11,967	108,062	46,325	19,693	2,865	47,674	8,575	125,554	116.2	—17,492	—30,028	—70,845	—50,257
	8 mos.	172	608,728	54,777	727,521	203,260	163,252	22,211	423,984	72,558	889,059	122.2	—161,538	—249,932	—540,247	—526,009
Great Northern	Aug.	8,328	6,300,267	432,975	7,367,293	1,006,567	1,152,716	151,755	2,168,733	316,697	4,882,422	66.3	2,484,871	1,889,057	1,718,345	2,384,167
	8 mos.	8,352	37,062,649	2,755,349	43,863,816	6,223,635	8,080,056	1,326,365	14,541,019	1,688,603	32,315,599	73.7	11,548,217	7,153,898	6,139,033	5,421,870
Green Bay & Western	Aug.	233	82,878	1,317	90,078	19,595	17,130	4,525	37,855	5,367	84,458	93.7	5,620	574	—64	14,488
	8 mos.	233	653,956	7,814	696,477	153,659	148,276	36,735	313,424	24,700	676,587	97.1	19,890	—23,026	—34,816	46,587
Gulf & Ship Island	Aug.	259	71,511	8,039	88,856	13,108	17,649	2,663	51,192	5,184	89,788	101.0	—932	—16,666	—25,753	—14,079
	8 mos.	261	615,016	57,626	776,343	117,920	122,942	19,824	369,089	38,157	669,263	86.2	107,080	—18,470	—98,293	—101,363

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FUEL ECONOMY HAS SAVED $440,000,000 SINCE 1922

Increased efficiency in the use of fuel in railway freight service has resulted in a total saving of $440,113,000 since 1922. The amount of savings in any year is dependent, of course, upon unit fuel consumption, volume of traffic, and cost of coal per ton. The details of these freight fuel savings are shown below:

The 1923 fuel use, as compared with 1922, saved two pounds of coal for every 1,000 tons of freight and equipment carried one mile, this increased efficiency saving 1,123,970 tons of coal. As the average cost of the railway coal in 1923 was $3.45 per ton, this meant a money saving of $3,878,000

Similar savings in subsequent years were:

1924	7,601,020	tons of coal, or	23,031,000
1925	13,364,771	" " " "	36,219,000
1926	16,204,916	" " " "	42,619,000
1927	19,715,712	" " " "	52,444,000
1928	22,538,484	" " " "	57,022,000
1929	24,593,828	" " " "	59,025,000
1930	24,001,803	" " " "	55,684,000
1931	21,109,858	" " " "	46,653,000
1932	15,160,220	" " " "	31,078,000
1933	16,561,104	" " " "	32,460,000

TOTAL FUEL SAVING, FREIGHT SERVICE.....$440,113,000

(RAILROAD DATA, AUGUST 17, 1934)

but,

it can be made more

That the economical use of fuel is a determining factor in the earning capacity of the railroads is clearly demonstrated by this enormous total fuel saving in freight service.

Of particular significance is the fact that, during this period, the railroads have been almost steadily reducing locomotive fuel consumption in freight service. Fuel consumption per 1000 gross ton-miles during 1933 was 121 pounds compared with 123 pounds in 1932. With consumption at 163 pounds in 1922, this figure has been reduced 26 per cent.

Contributory to this remarkable showing was undoubtedly the increasing proportion of locomotives equipped for superheating and feed water heating .... both important factors for improved operation by providing greater hauling capacity upon a more economical fuel rate.

A continuously improved locomotive fuel rate can be assured, but only through the use of up-to-date power. This requires the application of feed water heating equipment to many existing locomotives. Some locomotives also need improved superheaters. New locomotives, of course, should have the latest improved equipment.

Be sure you become familiar with the possibilities for increased capacity at a better fuel rate through Elesco superheaters and Elesco feed water heating equipment. They embody developments that should be a part of any locomotives expected to haul your traffic faster and more economically.

THE SUPERHEATER COMPANY

Representative of AMERICAN THROTTLE COMPANY, INC.

60 East 42nd Street
NEW YORK

ELESCO

Peoples Gas Building
CHICAGO

A-919

Canada: The Superheater Company, Limited, Montreal

Superheaters • Feed Water Heaters • Exhaust Steam Injectors • Superheated Steam Pyrometers • American Throttles

Revenues and Expenses of Railways

FOR MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1934—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	General	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income	Net ry. operating income, 1933
Gulf, Mobile & Northern	Aug.	961	$375,179	$22,239	$414,945	$57,619	$68,380	$31,555	$131,680	$32,442	$319,120	76.91	$95,825	$64,800	$22,112	$120,581
	8 mos.	961	3,191,376	146,004	3,496,010	452,140	514,630	273,329	1,079,308	197,180	2,510,078	71.80	985,932	737,822	338,374	505,007
Illinois Central	Aug.	5,009	5,680,031	933,747	7,085,319	640,938	1,439,146	193,220	2,540,184	328,929	5,175,686	73.0	1,909,633	1,470,854	1,221,004	1,313,010
	8 mos.	5,011	42,217,171	5,470,901	52,350,809	4,401,086	10,702,601	1,427,754	19,571,296	2,577,406	38,935,112	74.4	13,415,697	9,949,018	8,280,640	9,390,916
Yazoo & Mississippi Valley	Aug.	1,636	773,016	75,825	896,417	97,629	170,325	28,029	402,752	50,132	749,913	83.7	146,504	46,884	—75,537	98,612
	8 mos.	1,641	6,315,457	474,847	7,350,083	620,237	1,210,420	204,731	3,169,515	401,693	5,610,556	76.3	1,739,527	896,475	117,165	527,432
Illinois Central System	Aug.	6,646	6,453,047	1,009,572	7,981,736	738,567	1,609,471	221,249	2,942,936	379,061	5,925,599	74.2	2,056,137	1,515,827	1,156,064	1,421,902
	8 mos.	6,652	48,532,628	5,945,748	59,700,892	5,021,323	11,913,021	1,632,485	22,740,811	2,979,099	44,545,668	74.6	15,155,224	10,829,934	8,477,159	9,994,676
Illinois Terminal	Aug.	525	323,170	56,153	418,722	58,650	62,715	14,279	141,863	22,909	300,802	71.84	117,920	90,883	79,820	134,306
	8 mos.	525	2,574,360	448,228	3,261,091	394,485	480,358	116,768	1,164,652	134,016	2,294,536	70.36	966,555	758,374	620,598	549,056
Kansas City Southern	Aug.	882	736,547	19,715	851,722	69,361	125,240	45,738	269,053	80,477	590,776	69.4	260,946	200,938	153,702	141,669
	8 mos.	882	5,587,924	134,781	6,483,679	610,802	1,075,237	376,888	2,082,413	566,194	4,720,279	72.8	1,763,400	1,264,271	931,316	762,916
Kansas, Oklahoma & Gulf	Aug.	326	149,407	385	152,685	18,073	12,390	6,651	37,553	10,700	84,311	55.2	68,374	52,306	32,603	62,240
	8 mos.	326	1,235,417	2,965	1,261,496	138,894	104,028	57,878	295,518	68,111	637,063	50.9	624,433	511,200	377,196	308,001
Lake Superior & Ishpeming	Aug.	160	211,770	118	247,849	31,902	20,885	746	36,591	8,616	98,740	39.8	149,109	118,937	118,015	193,340
	8 mos.	160	867,292	1,150	999,106	198,619	156,866	5,138	207,603	48,813	616,960	61.8	382,146	240,795	225,654	329,050
Lehigh & Hudson River	Aug.	96	108,612	150	110,170	14,957	18,151	2,841	39,186	7,526	82,661	75.0	27,509	16,638	5,158	19,075
	8 mos.	96	950,108	1,556	978,733	119,693	169,600	25,586	328,507	54,276	697,662	71.3	281,071	199,387	101,534	120,226
Lehigh & New England	Aug.	227	284,631	445	287,222	40,321	57,695	5,216	97,718	19,050	219,998	76.6	67,224	55,788	66,832	46,226
	8 mos.	227	2,350,648	3,828	2,373,183	284,057	519,451	41,125	788,752	122,643	1,755,908	74.0	617,275	521,367	548,495	408,327
Lehigh Valley	Aug.	1,353	2,394,718	248,113	2,881,777	336,930	632,450	115,298	1,440,445	119,643	2,669,508	92.6	212,269	34,689	—63,446	688,791
	8 mos.	1,353	23,386,852	1,643,374	26,990,407	2,235,669	4,895,961	881,646	11,871,934	1,009,178	21,030,294	77.9	5,960,113	4,432,863	3,255,935	2,247,519
Louisiana & Arkansas	Aug.	608	368,283	9,658	404,794	56,412	60,164	24,331	95,731	22,635	258,958	64.0	31,448	114,388	102,912	107,573
	8 mos.	608	2,612,115	67,706	2,893,333	370,472	481,037	192,411	709,170	151,958	1,907,086	65.9	260,103	725,910	649,839	609,233
Louisiana, Arkansas & Texas	Aug.	255	79,304	541	86,206	22,675	10,672	4,062	27,697	5,983	67,127	77.9	19,079	16,579	2,544	—6,526
	8 mos.	255	600,118	2,507	642,728	139,736	74,207	35,618	213,827	36,161	495,584	77.1	147,144	127,108	11,733	—29,083
Louisville & Nashville	Aug.	5,062	4,593,791	504,765	5,449,217	695,575	1,062,131	159,064	2,077,910	297,450	4,325,288	79.4	1,123,929	826,526	836,428	1,608,991
	8 mos.	5,067	39,457,353	3,475,899	46,526,874	5,545,758	9,776,085	1,323,214	16,336,837	2,291,668	35,531,247	76.4	10,995,627	8,294,029	8,314,021	7,443,219
Maine Central	Aug.	1,056	659,983	102,035	863,663	145,812	106,578	12,472	311,300	36,717	612,873	71.0	250,790	201,499	189,803	172,105
	8 mos.	1,049	5,884,593	657,760	7,233,476	1,185,728	1,263,743	79,785	2,738,581	292,557	5,560,341	76.9	1,673,134	1,289,399	939,800	1,270,844
Midland Valley	Aug.	363	118,779	3,199	123,388	14,433	9,469	1,975	30,484	7,202	63,552	51.5	59,836	52,176	44,473	50,152
	8 mos.	363	779,098	3,211	814,535	123,780	86,282	18,312	222,746	50,636	497,425	61.1	317,110	266,890	212,412	257,293
Minneapolis & St. Louis	Aug.	1,627	769,946	17,443	828,845	147,863	125,082	21,974	324,235	49,894	667,123	80.5	161,722	150,228	110,735	88,715
	8 mos.	1,627	4,351,209	114,392	4,777,031	697,346	1,021,835	172,841	2,315,694	281,239	4,481,056	93.8	295,975	17,572	—147,910	109,725
Minn., St. Paul & S. S. Marie	Aug.	4,303	1,781,352	144,269	2,097,083	225,488	321,803	55,224	779,585	141,671	1,532,114	73.1	564,969	444,907	292,663	409,321
	8 mos.	4,304	12,630,994	752,783	14,622,320	2,018,030	2,826,212	467,267	5,981,718	893,435	12,234,256	83.7	2,388,064	1,253,678	251,764	134,507
Duluth, South Shore & Atlantic	Aug.	555	157,972	11,817	189,427	35,654	33,342	4,452	73,804	9,300	156,500	82.6	32,927	24,695	17,656	73,068
	8 mos.	557	1,289,765	77,443	1,510,757	231,236	301,394	36,010	598,228	49,960	1,213,432	80.3	297,325	207,843	124,240	74
Spokane International	Aug.	163	46,940	1,710	53,934	14,925	6,751	1,576	19,261	5,465	47,978	89.0	5,956	4,234	1,333	—5,501
	8 mos.	163	285,613	11,918	336,970	87,680	42,921	13,713	150,714	33,872	328,860	97.6	8,110	—21,556	—40,728	—94,226
Mississippi Central	Aug.	150	51,469	2,290	55,493	10,606	12,482	7,163	16,399	6,239	52,889	95.3	2,604	—287	—2,653	5,624
	8 mos.	150	399,856	12,218	427,720	74,912	85,600	55,151	130,829	43,948	390,437	91.3	37,283	14,431	—7,069	—23,093
Missouri & North Arkansas	Aug.	364	66,976	1,311	73,637	15,472	9,505	3,259	24,817	4,032	57,085	77.5	16,552	14,661	6,792	27,097
	8 mos.	364	577,412	10,472	644,670	153,418	84,519	26,502	219,751	30,483	514,423	79.8	130,247	115,658	40,865	—1,841
Missouri-Illinois	Aug.	213	79,117	818	82,008	23,329	10,398	2,540	28,988	6,992	72,236	88.1	9,772	4,067	—5,556	16,152
	8 mos.	213	611,854	4,018	629,917	137,933	82,482	20,323	205,560	45,515	491,736	78.1	138,181	95,355	38,728	—4,965
Missouri-Kansas-Texas Lines	Aug.	3,293	1,917,269	174,410	2,322,440	249,923	524,913	117,715	793,325	148,232	1,850,453	79.7	471,987	295,097	105,645	257,781
	8 mos.	3,293	14,689,981	1,246,383	17,768,890	2,169,882	3,162,763	900,079	6,214,308	1,091,288	13,663,023	76.9	4,105,867	2,691,612	1,211,647	525,889
Missouri Pacific	Aug.	7,357	5,623,221	390,899	6,589,508	990,322	1,372,224	222,783	2,331,196	377,766	5,312,532	80.6	1,276,976	1,062,593	497,894	855,682
	8 mos.	7,360	42,179,182	2,556,955	49,195,858	6,718,001	10,240,129	1,736,217	17,149,134	2,142,734	38,129,670	77.5	11,066,188	8,455,447	5,038,799	4,739,602
Gulf Coast Lines	Aug.	1,763	605,969	37,439	706,550	112,273	148,818	42,231	222,082	59,619	581,515	82.30	125,035	78,111	25,908	25,373
	8 mos.	1,764	6,159,042	262,57	6,884,318	997,519	1,171,385	333,900	2,037,930	376,149	4,906,391	71.27	1,977,927	1,590,524	865,536	248,499
International Great Northern	Aug.	1,159	859,935	60,114	1,037,092	138,921	173,811	28,401	409,488	62,864	825,257	79.57	211,835	176,452	66,267	36,432
	8 mos.	1,159	7,208,069	417,299	8,414,705	1,055,554	1,362,850	223,674	3,074,092	359,814	6,148,414	73.07	2,266,291	1,982,224	996,410	1,212,116
San Antonio, Uvalde & Gulf	Aug.	316	78,390	2,599	88,386	12,002	9,686	3,950	22,429	5,626	53,674	60.7	34,712	31,030	9,156	—2,018
	8 mos.	316	668,946	22,083	745,536	138,231	74,799	33,033	225,401	35,290	506,594	68.0	238,942	208,391	43,805	—104,853
Mobile & Ohio	Aug.	1,201	624,695	35,971	701,083	82,888	158,738	41,875	255,727	51,462	590,596	84.2	110,487	75,629	16,189	32,300
	8 mos.	1,201	5,258,088	200,105	5,785,615	793,287	1,391,200	320,153	2,102,209	301,133	4,907,800	84.8	877,815	605,485	53,733	136,863
Monongahela	Aug.	177	298,160	719	300,884	32,257	27,150	493	57,361	6,445	123,511	41.0	177,373	150,154	71,483	148,574
	8 mos.	177	2,590,877	6,852	2,615,776	267,607	229,096	2,925	521,455	31,299	1,051,167	40.2	1,564,609	1,385,635	761,834	746,906

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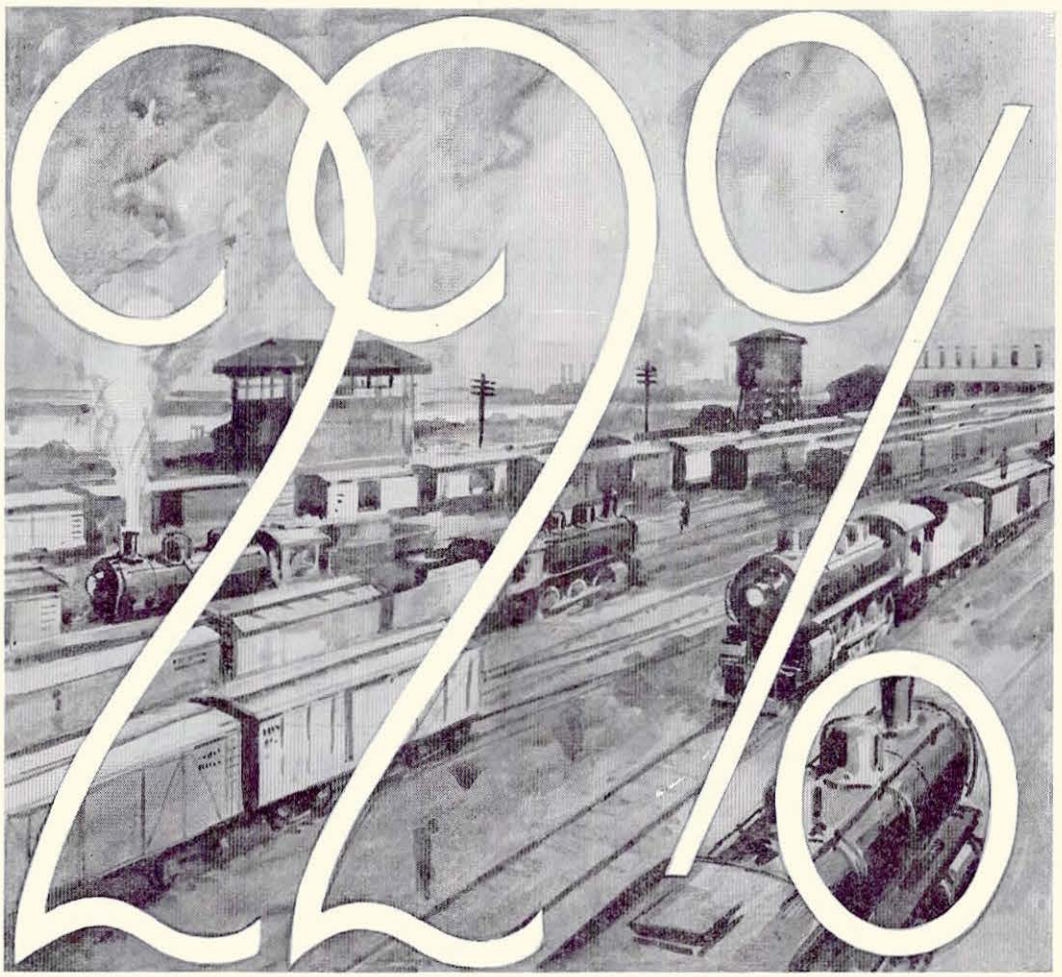
RAILROAD DIESELS FOR RAILROAD MEN



On a certain prominent American road the total transportation yard expense is about 22 per cent of the total operating expenses of the Railroad.

22 per cent is an impressive figure.

And right in the exact field where the Diesel switching locomotive can and does show startling operating economies.

Today, or in fact any day, this new facility merits very careful consideration by all Railroad Officials.

This advertisement is No. 13 of series calling attention to the many factors which, all combined, make the Alco Diesel an outstanding purchase.

AMERICAN LOCOMOTIVE COMPANY

ALCO DIESEL

30 CHURCH STREET · NEW YORK · N.Y.

Revenues and Expenses of Railways

FOR MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1934—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	General	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income	Net ry. operating income, 1933
Montour	Aug.	57	$175,374	$1	$175,663	$13,696	$34,876	$960	$34,533	$8,037	$92,102	52.4	$83,561	$62,216	$78,897	$86,151
	8 mos.	57	1,233,666	4	1,237,244	107,959	362,405	8,272	261,326	48,460	788,422	63.7	448,822	349,288	483,286	598,218
Nashville, Chatt. & St. Louis	Aug.	1,203	865,965	80,414	1,036,342	143,049	248,613	53,844	420,028	54,920	926,670	89.4	109,672	71,146	41,068	51,946
	8 mos.	1,203	7,202,823	576,716	8,658,474	1,153,028	1,953,974	439,302	3,319,637	444,320	7,347,532	84.9	1,310,942	1,012,109	788,818	921,544
Nevada Northern	Aug.	165	30,147	366	34,447	8,243	3,826	712	6,967	3,988	23,736	68.9	10,711	3,491	7,871	—4,098
	8 mos.	165	190,912	6,787	229,168	67,126	23,550	5,431	55,030	26,701	177,838	77.6	51,330	—1,993	29,936	—40,655
New York Central	Aug.	11,411	16,024,076	4,861,641	24,014,857	2,939,990	4,549,387	553,401	9,080,062	996,913	18,466,171	76.9	5,548,686	3,699,569	2,324,476	4,450,661
	8 mos.	11,411	139,039,316	36,240,307	199,359,580	19,816,875	40,528,366	4,169,026	73,453,335	8,137,142	148,725,990	74.6	50,633,590	32,534,944	21,317,615	21,818,796
Pittsburgh & Lake Erie	Aug.	233	1,185,931	47,491	1,273,010	160,849	419,461	25,660	440,076	63,061	1,116,879	87.7	156,131	83,936	230,929	446,515
	8 mos.	233	9,874,558	382,021	10,597,735	869,848	3,435,096	197,699	3,541,958	518,891	8,612,819	81.3	1,984,916	1,270,211	2,440,879	2,004,641
New York, Chicago & St. Louis	Aug.	1,691	2,462,743	131,492	2,694,545	351,138	377,958	102,183	972,539	118,902	1,920,799	71.2	773,746	615,229	357,650	585,012
	8 mos.	1,691	21,138,241	591,535	22,511,181	2,315,437	3,310,835	799,760	7,750,874	973,399	15,116,600	67.2	7,394,581	6,203,258	3,969,871	3,465,341
New York, New Haven & Hartford	Aug.	2,072	2,989,017	1,805,430	5,455,252	680,303	1,008,046	79,680	2,204,819	329,157	4,419,765	81.0	1,035,487	656,882	145,305	929,773
	8 mos.	2,069	26,901,321	14,294,478	46,650,180	5,401,363	8,294,241	592,139	18,136,836	1,944,696	35,406,023	75.9	11,244,157	8,295,836	4,017,941	4,802,281
New York Connecting	Aug.	20	179,124	.....	190,991	12,473	7,193	.....	29,200	1,168	50,034	26.2	140,957	107,657	65,442	29,146
	8 mos.	20	1,719,729	.....	1,814,861	84,671	59,471	.....	228,279	8,043	380,464	21.0	1,434,397	1,167,167	846,927	932,209
New York, Ontario & Western	Aug.	568	663,921	119,580	857,555	145,912	143,575	10,640	326,365	39,648	667,698	77.9	189,857	144,857	94,540	262,739
	8 mos.	568	5,643,793	340,831	6,579,206	732,612	1,169,456	93,417	2,661,110	211,963	4,897,405	74.5	1,681,801	1,318,120	925,320	1,288,915
Norfolk & Western	Aug.	2,184	5,613,031	177,682	6,001,739	698,453	1,286,507	113,326	1,379,440	297,458	3,784,138	63.1	2,217,601	1,517,365	1,689,065	3,092,479
	8 mos.	2,185	46,015,369	1,160,511	48,695,645	5,065,970	10,958,163	903,767	10,988,619	1,642,494	29,654,047	60.9	19,041,598	13,478,501	14,772,533	14,494,256
Norfolk Southern	Aug.	932	351,203	14,578	380,373	71,819	46,949	20,866	141,942	30,506	312,082	82.0	68,291	42,272	14,381	27,971
	8 mos.	932	3,053,535	82,453	3,276,474	536,888	394,938	152,765	1,125,219	185,829	2,395,639	73.1	880,835	669,593	430,113	25,423
Northern Pacific	Aug.	6,745	4,920,293	338,411	5,763,600	564,911	1,058,172	141,173	1,871,586	358,172	4,068,657	70.6	1,694,943	1,172,455	1,410,234	1,360,844
	8 mos.	6,745	27,620,138	2,246,380	33,044,301	3,760,892	7,077,696	1,202,080	12,603,451	2,150,688	27,270,561	82.5	5,773,740	1,877,894	4,185,232	1,472,641
Northwestern Pacific	Aug.	386	203,237	95,566	335,899	45,130	58,204	4,566	153,686	20,622	281,909	83.9	53,990	38,739	26,735	54,691
	8 mos.	386	1,292,392	652,575	2,205,169	312,775	374,251	34,228	1,107,719	116,793	1,944,219	88.2	260,950	128,935	42,021	—218,303
Oklahoma City-Ada-Atoka	Aug.	132	22,340	544	24,501	5,708	1,295	666	10,400	1,994	20,063	81.9	4,438	1,719	—5,277	—3,111
	8 mos.	132	208,562	2,723	225,031	39,496	13,524	5,250	81,044	12,973	151,623	67.4	73,408	49,896	—4,930	—8,726
Pennsylvania	Aug.	10,511	20,152,839	5,017,863	28,168,232	2,603,103	5,470,849	613,705	10,032,115	1,938,973	20,997,975	74.5	7,170,257	4,631,678	3,703,036	7,623,980
	8 mos.	10,511	171,930,274	38,493,743	233,531,205	21,540,084	46,523,894	4,509,903	83,066,532	11,310,921	169,396,551	72.6	63,934,654	46,744,716	39,829,252	40,252,619
Long Island	Aug.	400	395,279	1,751,85	2,266,178	156,770	312,571	21,252	866,535	85,360	1,443,557	63.7	822,621	491,465	285,230	522,924
	8 mos.	400	3,784,682	11,868,65	16,445,120	1,474,657	2,537,370	116,799	7,253,961	473,839	11,857,820	72.1	4,587,300	2,831,992	1,439,335	2,719,648
Penna.-Reading Seashore Lines	Aug.	411	242,752	544,71	824,318	36,092	103,628	15,130	384,895	41,271	582,548	70.7	241,770	107,726	—47,821	—30,270
	8 mos.	411	1,834,525	1,993,71	4,039,912	352,068	614,894	74,870	2,533,952	220,809	3,791,810	93.9	248,102	—428,556	—1,291,259	—599,673
Pere Marquette	Aug.	2,229	1,717,252	104,56	1,942,291	269,196	444,023	58,994	748,128	87,337	1,612,129	83.0	330,162	224,956	131,007	330,938
	8 mos.	2,238	15,675,005	522,04	17,157,892	1,888,998	3,645,804	462,145	6,380,265	707,168	13,112,885	76.4	4,045,007	3,252,837	2,416,297	1,101,829
Pittsburg & Shawmut	Aug.	101	35,062	16	35,807	8,979	16,037	1,250	13,610	4,583	44,459	124.2	—8,652	—9,644	—4,332	39,645
	8 mos.	101	422,696	3,39	431,677	76,818	138,278	10,787	134,565	24,310	384,758	89.1	46,919	41,951	82,916	75,620
Pittsburgh & West Virginia	Aug.	138	223,599	.....	236,274	23,493	53,264	14,610	50,570	16,894	167,257	70.8	69,017	46,866	70,945	136,086
	8 mos.	138	1,814,940	.....	1,895,988	167,352	497,098	113,023	386,419	111,206	1,339,138	70.6	556,850	376,277	606,180	653,216
Pittsburg, Shawmut & Northern	Aug.	195	46,297	19	47,807	17,759	17,860	1,234	23,650	7,965	68,468	143.2	—20,661	—22,781	—27,595	21,239
	8 mos.	195	594,777	1,41	618,637	154,552	160,144	10,584	228,075	51,686	605,041	97.8	13,596	—4,470	—47,320	36,462
Reading	Aug.	1,461	3,455,141	248,91	3,912,090	335,345	702,484	72,267	1,555,698	189,532	2,872,684	73.4	1,039,406	805,415	837,264	1,478,689
	8 mos.	1,461	32,606,647	1,991,58	36,339,040	2,637,194	6,806,819	575,996	13,331,434	1,525,101	25,014,195	68.8	11,324,845	8,757,371	8,873,231	8,449,655
Richmond, Fredericksburg & Potomac	Aug.	117	245,252	93,282	443,201	55,470	106,227	8,686	169,498	39,558	384,943	86.9	58,258	33,088	27,115	—4,272
	8 mos.	117	2,315,685	1,060,020	4,294,946	408,328	930,820	66,025	1,660,360	242,484	3,387,369	78.9	907,577	684,547	366,345	372,117
Rutland	Aug.	413	173,514	43,925	287,487	57,017	52,324	10,695	130,791	12,925	263,752	91.7	23,735	3,736	7,042	51,223
	8 mos.	413	1,474,843	263,197	2,198,293	380,468	452,637	83,109	1,043,830	108,038	2,067,481	94.0	130,812	—29,486	—5,678	173,974
St. Louis-San Francisco	Aug.	5,099	3,135,953	243,235	3,695,361	584,746	822,306	95,725	1,253,715	217,922	2,963,948	80.2	731,413	505,589	478,254	663,029
	8 mos.	5,170	23,065,040	1,589,335	26,986,021	4,369,155	6,220,424	762,827	9,462,652	1,232,714	22,049,034	81.7	4,936,987	2,830,332	2,576,448	2,203,895
Ft. Worth & Rio Grande	Aug.	233	36,869	1,443	45,138	11,207	11,072	2,078	22,529	4,786	51,672	114.5	—6,534	—10,287	—16,309	—57,933
	8 mos.	233	227,918	9,341	290,437	107,674	78,086	18,400	170,165	30,716	405,007	139.4	—114,570	—144,627	—188,081	—294,550
St. Louis, San Fran. & Texas	Aug.	261	99,534	578	103,191	34,372	16,887	4,687	34,189	10,849	100,975	97.9	2,216	—2,553	—28,215	—26,037
	8 mos.	261	631,643	4,703	661,725	238,332	123,042	36,406	268,886	62,665	728,090	110.0	—66,365	—99,123	—304,974	—262,172
St. Louis Southwestern Lines	Aug.	1,810	1,021,819	19,776	1,094,623	153,545	197,726	66,279	393,566	86,079	903,401	82.5	191,222	117,019	14,705	108,697
	8 mos.	1,838	9,068,135	135,102	9,645,909	1,017,652	1,369,927	539,765	3,132,803	507,564	6,615,466	68.6	3,030,443	2,466,853	1,378,541	1,035,234
San Diego & Arizona Eastern	Aug.	155	28,946	3,991	34,211	11,059	8,713	1,448	14,532	5,512	41,826	122.3	—7,615	—10,295	—8,556	—662
	8 mos.	155	278,048	37,605	323,862	78,625	69,632	12,849	125,690	34,268	325,595	100.5	—1,733	—16,576	—7,309	—25,499
Seaboard Air Line	Aug.	4,308	1,860,716	241,926	2,311,693	386,642	572,809	132,018	965,151	189,084	2,270,751	98.2	40,942	—116,643	—149,803	69,778
	8 mos.	4,309	18,613,217	2,225,434	23,258,487	3,798,852	4,800,051	1,051,606	8,219,155	1,094,913	19,214,546	82.6	4,043,941	2,361,483	1,472,052	1,720,406

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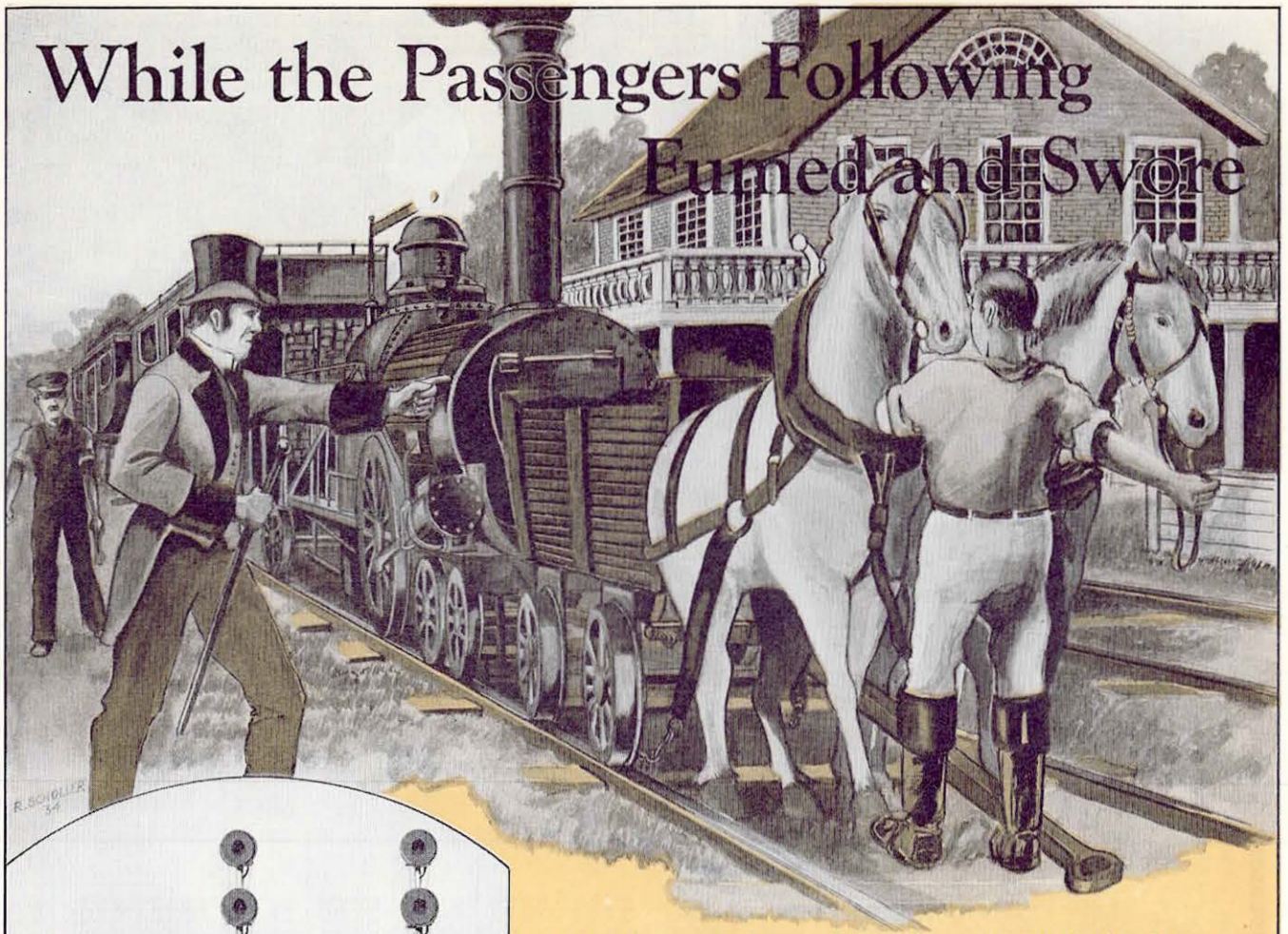
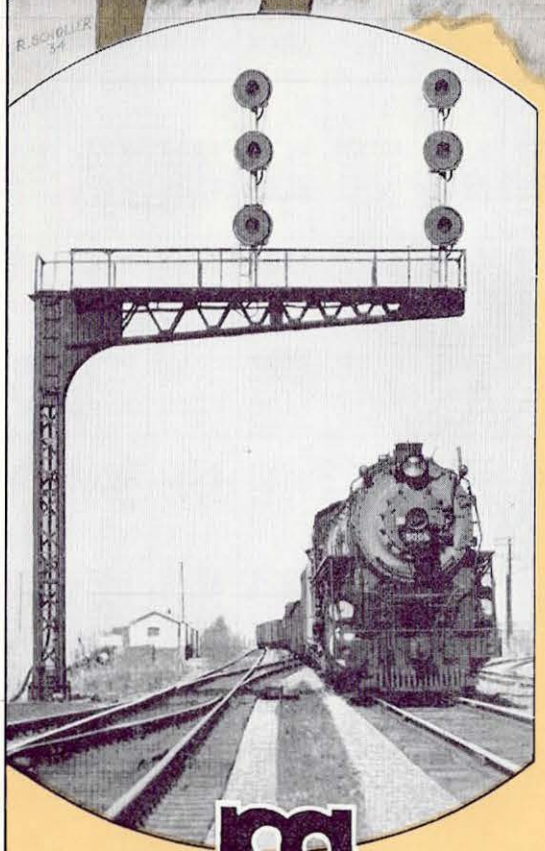
While the Passengers Following Fumed and Swore





IN the early days of travel on the Philadelphia & Columbia Railroad, any one who owned a car and could pay the wheel toll was free to come and go at his own sweet will. Turnouts were few and far apart and it was the delight of a farmer with a pair of crowbaits attached to a dilapidated four-wheeled car, on which a hatful of potatoes bobbed about, to stop every few miles to water his horses, get a drink himself, light his pipe and inquire of a neighbor returning on the other track the price of potatoes in Philadelphia, while a trainload of passengers, drawn by a locomotive following him, fretted, fumed and swore. He had paid his wheel toll.

Compare traffic in those days with the safe, speedy and economical operation of today on railway divisions equipped with "Union" Centralized Traffic Control. Train operation by signal indication, from a centralized point, without written train orders, permits tremendous reductions in running time and operating costs. It is a modern, efficient system which quickly liquidates itself.

1881 1934

Union Switch & Signal Co.

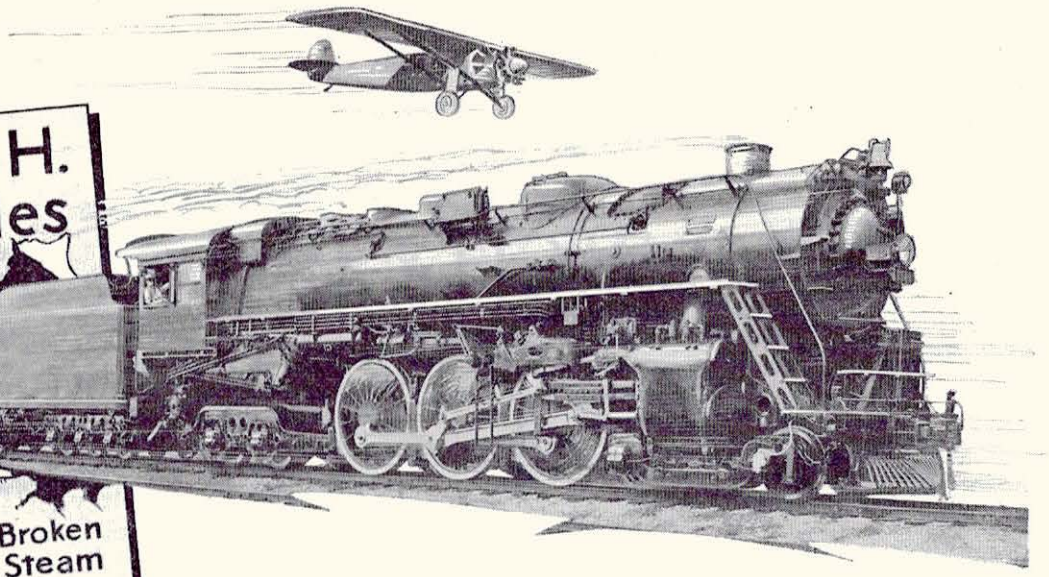
SWISSVALE, PA.

NEW YORK MONTREAL CHICAGO ST. LOUIS SAN FRANCISCO

Revenues and Expenses of Railways

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1934—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	General	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income	Net ry. operating income, 1933
Southern Ry.	Aug.	6,644	$5,084,191	$716,605	$6,380,463	$876,510	$1,261,567	$133,909	$2,395,629	$381,293	$5,088,178	79.8	$1,292,285	$848,298	$699,578	$1,423,333
	8 mos.	6,644	42,252,511	5,220,747	52,198,791	6,845,705	9,696,596	1,120,269	18,991,424	2,065,711	39,029,842	74.8	13,168,949	9,542,442	8,044,675	9,770,105
Alabama Great Southern	Aug.	315	318,967	49,463	402,135	75,429	97,049	11,939	137,144	21,304	345,442	85.9	56,693	36,890	39,830	101,989
	8 mos.	315	2,650,792	337,894	3,252,941	583,958	715,720	84,355	1,072,711	121,097	2,596,622	79.8	656,319	459,847	427,991	343,849
Cinn., New Orleans & Tex. Pac.	Aug.	336	945,932	75,600	1,079,212	149,557	183,077	24,693	271,505	52,233	685,343	63.5	393,869	326,239	284,486	433,863
	8 mos.	336	7,533,147	529,415	8,542,274	1,027,555	1,481,313	187,329	2,166,947	298,226	5,196,269	60.8	3,346,005	2,776,343	2,415,953	2,409,612
Georgia Southern & Florida	Aug.	397	96,812	25,904	137,943	30,716	37,599	1,508	66,489	5,939	144,184	104.5	—6,241	—19,606	—10,502	—6,434
	8 mos.	397	926,742	211,518	1,285,110	231,453	295,584	13,353	564,327	22,680	1,144,275	89.0	140,835	36,144	80,010	20,832
New Orleans & Northeastern	Aug.	204	147,438	18,085	179,774	24,520	33,704	5,614	62,465	12,247	139,985	77.9	39,789	14,932	1,869	—6,985
	8 mos.	204	1,213,212	141,261	1,464,927	206,354	276,134	43,581	506,889	71,830	1,116,033	76.2	348,894	161,960	43,627	—245,189
Northern Alabama	Aug.	99	36,238	1,965	39,911	4,445	1,492	1,292	15,611	2,653	25,493	63.9	14,418	10,988	1,767	—5,877
	8 mos.	99	331,162	13,493	358,186	80,779	11,581	9,056	120,964	14,008	235,536	65.8	122,650	97,013	17,496	—19,545
Southern Pacific	Aug.	8,798	7,895,714	1,438,774	10,472,343	912,652	1,797,520	271,443	3,606,653	743,966	7,519,096	71.8	2,953,247	2,173,971	1,937,105	1,116,015
	8 mos.	8,850	57,352,051	10,499,198	75,066,934	7,609,498	12,822,551	2,155,974	25,931,572	4,440,601	54,336,378	72.4	20,730,556	14,134,205	11,224,697	3,178,629
So. Pac. Steamship Lines	Aug.	....	362,332	29,086	401,729	16,271	101,204	18,347	286,586	25,219	447,627	111.4	—45,898	—46,445	—46,577	53,218
	8 mos.	....	2,748,197	120,563	2,962,181	126,368	877,169	130,189	2,163,510	163,753	3,460,989	116.8	—498,808	—504,084	—501,983	—330,460
Texas & New Orleans	Aug.	4,447	2,127,094	252,972	2,711,815	416,310	577,679	108,522	962,394	262,969	2,336,416	86.2	375,399	112,503	—48,723	120,643
	8 mos.	4,470	16,597,762	1,647,629	20,756,830	3,226,110	4,828,628	887,758	7,195,100	1,668,436	17,890,052	86.2	2,866,778	1,009,074	—587,981	—560,053
Spokane, Portland & Seattle	Aug.	552	539,411	53,973	631,799	56,654	73,856	8,201	166,799	22,900	331,489	52.5	300,310	246,014	205,083	132,356
	8 mos.	552	3,248,706	315,105	3,845,503	338,918	489,651	47,847	1,167,161	121,366	2,180,497	56.7	1,665,006	1,205,176	990,902	442,894
Tennessee Central	Aug.	287	158,040	5,943	174,400	30,315	28,933	5,346	60,354	12,955	137,816	79.0	36,584	32,674	18,280	50,508
	8 mos.	287	1,271,481	42,114	1,392,727	220,745	204,591	41,458	467,622	86,581	1,019,749	73.2	372,978	339,035	226,376	176,846
Texas & Pacific	Aug.	1,950	1,457,962	165,254	1,840,929	183,056	300,137	64,379	542,249	135,221	1,242,813	67.5	598,116	486,664	375,243	294,451
	8 mos.	1,950	11,593,319	1,241,218	14,499,178	1,468,316	2,484,933	512,495	4,227,365	898,452	9,717,434	67.0	4,781,744	3,912,943	2,975,592	2,153,628
Texas Mexican	Aug.	162	70,272	271	78,786	10,288	10,623	2,882	34,408	9,218	67,390	85.5	11,396	7,146	3,063	—15,546
	8 mos.	162	541,424	2,806	597,498	82,530	95,643	23,640	212,304	55,325	468,570	78.4	128,928	94,191	60,460	—82,377
Toledo, Peoria & Western	Aug.	239	182,515	3	184,819	45,916	12,249	14,337	39,322	7,357	119,181	64.5	65,638	53,887	39,295	22,201
	8 mos.	239	1,147,405	121	1,164,474	299,932	95,685	118,165	327,519	70,501	911,802	78.3	252,672	216,566	106,516	154,059
Union Pacific	Aug.	3,767	5,603,011	543,310	6,693,063	585,586	1,385,334	110,060	1,867,899	344,010	4,383,146	65.5	2,309,917	1,847,698	1,419,730	1,282,241
	8 mos.	3,767	35,487,195	3,412,895	42,850,562	4,095,516	9,878,086	933,035	12,807,160	2,180,462	30,472,934	71.1	12,377,628	8,746,564	6,728,033	7,671,816
Oregon Short Line	Aug.	2,504	2,046,341	126,081	2,310,175	245,111	375,655	31,570	643,069	113,951	1,431,039	61.9	879,136	652,089	569,827	343,880
	8 mos.	2,504	11,352,214	797,715	13,216,564	1,726,080	2,211,742	249,982	4,185,205	721,290	9,351,415	70.8	3,865,149	2,048,606	1,454,209	1,169,266
Oregon, Wash. R. R. & Nav. Co.	Aug.	2,293	1,492,181	120,484	1,779,191	246,553	241,608	47,497	511,877	104,956	1,160,755	65.2	618,436	478,421	377,099	177,177
	8 mos.	2,295	8,104,274	804,594	10,005,563	1,805,791	1,438,028	379,983	3,546,212	684,986	7,905,314	79.0	2,100,249	1,007,759	228,403	—459,352
Los Angeles & Salt Lake	Aug.	1,232	1,179,257	156,165	1,458,032	118,020	254,126	41,266	397,419	69,044	916,752	62.9	541,280	420,867	294,286	156,985
	8 mos.	1,240	8,950,912	1,024,832	10,832,038	1,205,107	1,607,418	343,880	3,059,853	451,667	6,912,328	63.8	3,919,710	2,955,850	2,004,769	671,496
St. Joseph & Grand Island	Aug.	258	258,091	2,150	266,678	36,883	27,129	2,045	80,569	14,658	162,181	60.8	104,497	92,736	55,288	53,451
	8 mos.	258	1,781,402	15,224	1,851,666	249,263	191,918	17,247	548,818	93,386	1,106,516	59.8	745,150	624,264	380,339	318,480
Utah	Aug.	111	46,623	.....	46,878	10,093	16,555	557	11,292	4,773	43,270	92.3	3,608	—4,460	—15,213	—9,000
	8 mos.	111	354,007	.....	355,085	72,743	126,915	4,320	90,893	39,700	334,571	94.2	20,514	—32,153	—115,577	27,561
Virginian	Aug.	619	1,151,766	4,797	1,231,601	100,980	201,110	16,276	207,771	37,949	563,037	45.7	668,564	518,564	390,092	631,030
	8 mos.	619	9,000,787	41,011	9,414,179	823,269	1,679,276	130,432	1,675,581	211,989	4,514,925	48.0	4,899,254	3,749,247	4,256,911	3,865,816
Wabash	Aug.	2,457	2,787,201	197,79	3,171,862	469,872	474,636	133,375	1,223,812	179,656	2,492,772	78.6	679,090	548,319	227,226	354,769
	8 mos.	2,457	22,937,232	1,332,64	25,916,054	3,221,245	4,125,928	1,062,356	9,698,975	1,042,722	19,199,879	74.1	6,716,175	5,661,708	2,900,451	1,127,957
Ann Arbor	Aug.	293	264,048	4,88	287,471	28,843	51,295	11,163	118,996	15,349	226,239	78.7	61,232	50,764	31,509	58,884
	8 mos.	293	2,124,786	24,504	2,229,414	195,735	398,496	86,438	937,002	87,873	1,706,998	76.6	522,416	415,547	265,625	116,320
Western Maryland	Aug.	889	1,064,031	14,03	1,107,390	155,693	235,769	35,146	294,204	64,841	791,200	71.4	316,190	266,190	307,848	426,821
	8 mos.	891	8,929,202	74,56	9,257,596	1,234,200	2,065,624	276,144	2,359,167	348,825	6,303,872	68.1	2,953,724	2,383,724	2,698,558	2,447,504
Western Pacific	Aug.	1,213	1,059,967	37,52	1,161,202	263,306	183,406	55,122	405,166	57,464	1,000,185	86.1	161,017	92,666	62,502	186,658
	8 mos.	1,213	7,009,770	188,59	7,578,895	1,254,608	1,283,562	432,385	2,704,670	309,409	6,178,575	81.5	1,400,320	846,186	661,335	63,696
Wheeling and Lake Erie	Aug.	511	800,633	1,65	872,825	110,490	312,874	28,804	286,779	43,912	782,859	89.7	89,966	25,313	9,477	350,756
	8 mos.	511	7,381,751	12,44	7,868,372	769,370	2,407,777	228,117	2,332,676	240,114	5,976,901	76.0	1,891,471	1,219,152	1,112,546	1,211,169
Wichita Falls & Southern	Aug.	203	28,543	4	30,560	7,855	5,717	1,688	12,081	4,568	31,909	104.41	—1,349	—4,829	—7,150	4,489
	8 mos.	203	309,368	358	350,955	73,338	53,317	13,732	102,568	27,586	270,541	77.09	80,414	56,583	33,274	41,344



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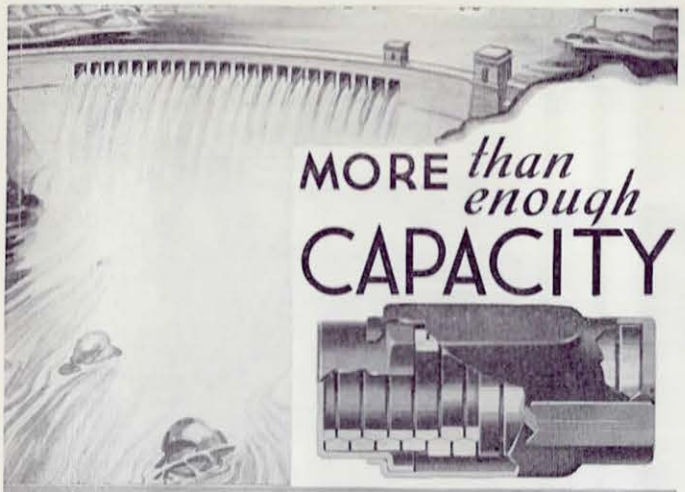

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STATEMENT of the ownership, management, circulation, etc., required by the Act of March 3, 1933, of *Railway Age, published weekly at Philadelphia, Pa., for* October 6, 1934.

State of New York } ss.
County of New York }

Before me, a *Notary Public* in and for the State and county aforesaid, personally appeared *Roy V. Wright*, who, having been duly sworn according to law, deposes and says that he is the *Managing Editor* of the *Railway Age*, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:
Publisher, Simmons-Boardman Publishing Company, 30 Church St., New York City.
Editor, S. O. Dunn, 105 W. Adams St., Chicago, Ill.
Managing Editor, Roy V. Wright, 30 Church St., New York City.
Business Managers, None.

2. That the owners are: Simmons-Boardman Publishing Company, 30 Church Street, New York, N. Y.; Simmons-Boardman Publishing Corporation, 30 Church Street, New York, N. Y.; Stockholders of 1 per cent or more of the total amount of stock are: I. R. Simmons, 1625 Ditmas Avenue, Brooklyn, N. Y.; P. A. Lee, Hopatcong, N. J.; Henry Lee, Hopatcong, N. J.; E. G. Wright, 398 N. Walnut Street, E. Orange, N. J.; S. O. Dunn, 105 West Adams Street, Chicago, Ill.; C. E. Dunn, 3500 Sheridan Blvd., Chicago, Ill.; B. L. Johnson, 105 West Adams Street, Chicago, Ill.; W. A. Radford, 407 S. Dearborn Street, Chicago, Ill.; L. B. Sherman, 375 Sheridan Road, Winnetka, Ill.; Mae E. Howson, 105 West Adams Street, Chicago, Ill.; Spencer, Trask & Company, 25 Broad Street, New York, N. Y. General partners of Spencer, Trask & Company are: E. M. Bulkley, Acosta Nichols, Cecil Barret, C. Everett Bacon, William R. Basset, F. Malbone Blodget, Henry S. Allen, Henry M. Minton, William Kurk Beckers, Arthur H. Gilbert, all of 25 Broad Street, New York, N. Y. Percival Gilbert, William E. Stanwood, John T. Nightingale, all of 50 Congress Street, Boston, Mass., are General Partners, Henry A. Colgate, 25 Broad Street, New York, N. Y., Special Partner, and S. Bayard Colgate, Special Partner, 15 Exchange Place, Jersey City, N. J.

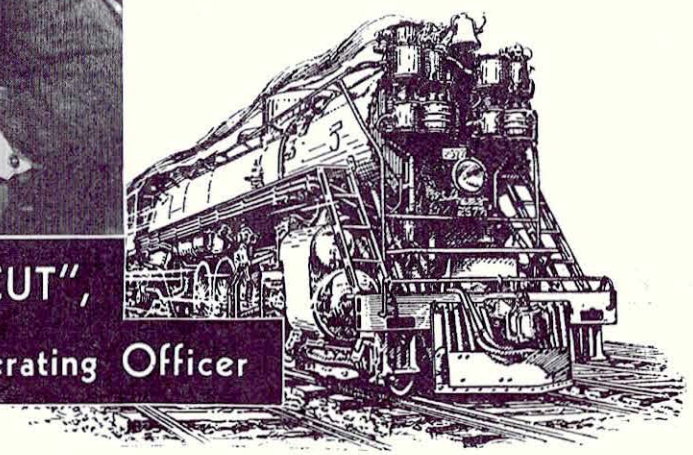
3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: *None.*

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

ROY V. WRIGHT.

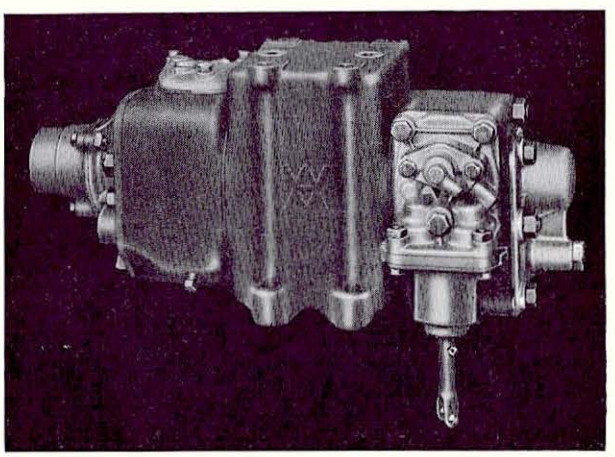
Sworn to and subscribed before me this 28th day of September, 1934. H. D. NELSON.

[Seal] (My commission expires March 30, 1935.)



"COSTS MUST BE CUT", decrees the Chief Operating Officer

THE Chief Operating Officer scans every item of expense—frowning at increases and smiling upon reductions . . . . When reports indicate that higher train schedules are being maintained without delays; when damages to equipment and lading are "few and far between"; when heavier tonnage trains are handled in safety; when a high percentage of cars are kept available for service at all times; when fuel expense is at a minimum;—he knows that all factors which effect operating costs are functioning efficiently. The "AB" Equipment—our new brake for freight train service—contributes greatly to these results.



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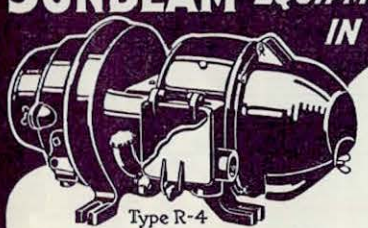

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SUNBEAM Train Control Turbo-Generators operate at constant speed, insuring close voltage regulation. Designed especially to meet the critical demands of train control, they effect great economy in steam and maintenance costs. Their performance in actual use demonstrates their reliability over long periods of service. Write for further details.

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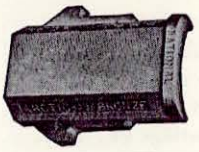
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Steam *and* Electric Specialties
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NEW YORK

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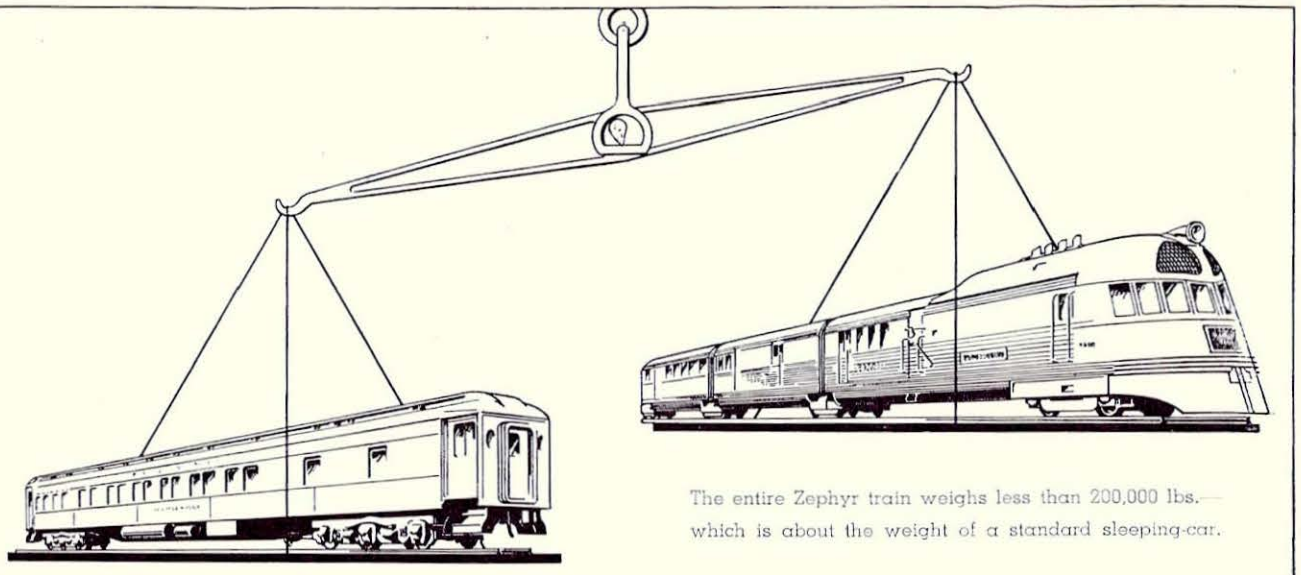

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ELECTRO METALLURGICAL COMPANY

Unit of Union Carbide and Carbon Corporation

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Electromet

Ferro-Alloys & Metals

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NEW EFFICIENCY INSURES MULTIPLIED ECONOMIES

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